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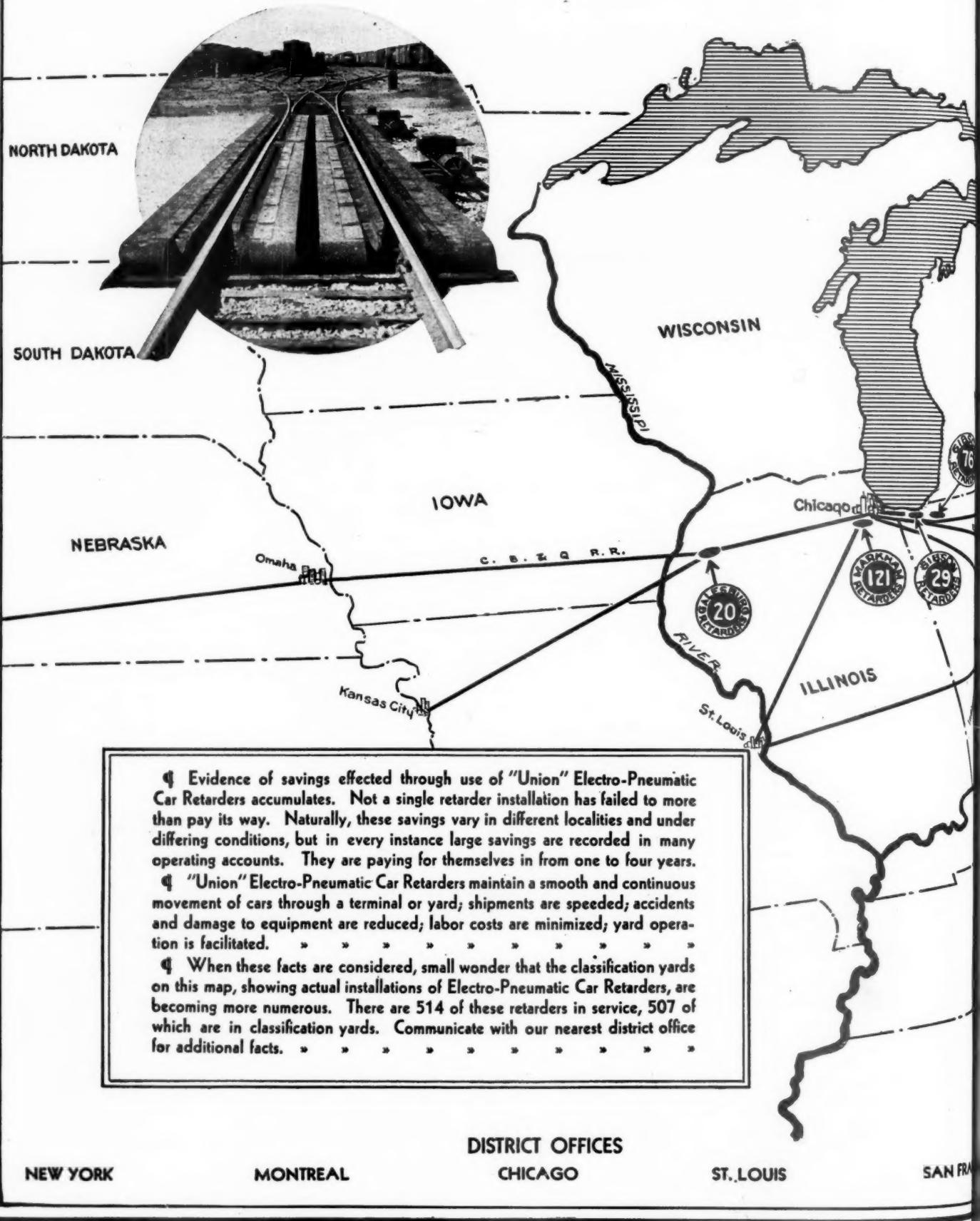
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A NECESSITY --- *not a luxury*



Could Express Agency Solve L. C. L. Problem?

One of the many interesting suggestions in the proposed report of I. C. C. Examiner Flynn on the co-ordination of transportation is that to the effect that railway managements might well give consideration to the practicability of extending the operations of the Railway Express Agency to include l.c.l. freight service. The suggestion of the advisability of giving consideration to such a proposal was to the best of our knowledge first made publicly in the *Railway Age* as long ago as September, 1929. Since that time the idea has frequently reappeared in print and from the platform—without, as far as we can learn, having aroused either opposition or action.

If there is any serious criticism to be offered regarding this proposal, it ought to be voiced. If there is no such criticism, then why should not the railroads authorize and encourage the express agency to initiate some experimental step in this direction?

The railroads have a huge investment in the agency and one which, with truck competition on the one hand and that of better railroad service on the other, is being gravely jeopardized. The railways, to meet truck competition, are giving faster service and are extending store-door delivery. When they offer the latter service, the usual practice is to contract with local truckmen to provide it. Meantime, the railroad-owned express agency is in existence at every point where this service is offered. It has an overhead and supervisory organization for dealing with collection and delivery which would not have to be materially increased to take over l.c.l. handling. At most the added outlay would be no more than that necessary to provide a few more trucks and a few more drivers at each point. In many cases, undoubtedly, l.c.l. could be handled in the idle time of existing equipment, no additional investment being necessary.

The Railway Express Agency is losing traffic to trucks, just as the railways are. When the railways offer improved service and provide collection and delivery, they also compete with the express agency. Granted that this latter development is a necessary one, should it not be worked out in such a manner that it will utilize the organization and facilities of the

express agency, protecting the railways' investment therein, while at the same time assuring a more efficient, more economical and more reliable service than can be expected from local contract truckmen?

One hears much nowadays about rail and highway co-ordination as if it were something entirely new. As a matter of fact, however, rail and highway co-ordination has been the job of the express agency and its predecessors for generations. Moreover, it is the largest operator of motor vehicles in carrier service in the country and as such, presumably, has the experience necessary to assure the highest degree of efficiency in their operation.

Someone has said that no concern ever made a success in both retail and wholesale trade, and that the railroads are no exception. Certain it is that they are losing l.c.l. traffic steadily, not only to trucks but to the consolidators. Yet they are unable to reduce their costs in proportion to the decline in business as long as they continue to provide facilities to handle the traffic which remains to them. Is there not much to be said in favor of turning over the whole traffic to some subsidiary or affiliated organization which could give the handling of this traffic the specialized attention which it requires?

Reduced traffic brings serious problems in the handling of l.c.l. The railroads have to continue through cars to all important points to avoid still further losses of business, yet the maintenance of this service often means the operation of cars with a lading of only a few hundred pounds—a costly business. The substitution of unit containers for box cars for destinations with light traffic is one way out of the difficulty. But does not the real solution of the problem lie even deeper? In a city with many competing railroads each of them dispatches daily through cars—most of them lightly loaded—to all important points. Could there not be a tremendous saving if all this traffic were consolidated by an organization acting on behalf of all the railways and which could be relied upon to divide the line-haul business equitably among them? This would mean the heavier loading of fewer cars while giving the shipper the same service that is offered at

present—better service in fact since, with the I.c.l. of all railroads pooled, the agency could load through cars to many more points than is possible with the roads acting separately as they do now.

There is, of course, to be considered the fact that a number of railways have motor transport subsidiaries which are now offering, in connection with the railway service, a collection and delivery service for I.c.l. shipments. Then too, one or two railroads have acquired a financial interest in forwarding concerns operating over their lines. Certainly no one could expect these railways to hand over this work to the express agency at the outset. But there are many railroads which have neither motor transport organizations nor close relations with forwarders, but which nevertheless have the problem of store-door collection and delivery and an unremunerative and declining I.c.l. traffic acutely on their hands. Might not the express agency make a beginning by offering its services to these roads, a service which could be extended as the demand for it grew?

I.c.l. handling is a sick business. Probably never profitable, it is less so now than ever before. Not that rates are too low; on the contrary many of them are too high to hold the traffic and the whole structure is out-of-date in the face of a flexible and growing competitor. The solution lies in bringing down the costs of the service and passing along enough of the savings to the users to hold the business on the rails.

Conditions now demand attention to net revenues rather than to gross, and to competition from without rather than among the railroads. It is easily conceivable, by effecting the large economies which improved methods promise, that rates could be revised sufficiently to attract an increasing volume of traffic, while at the same time securing for the railways a larger net revenue from this service than they have ever enjoyed heretofore. But a beginning must be made. Why not make it now?

British Roads Challenge Trucks on Service Basis

The recent purchase by the Great Western of Great Britain of 227 motor trucks with which to expand its already extensive highway freight operations serves as a new reminder of the comprehensive manner in which British railways have met the challenge of highway competition for freight traffic. A brief review of their methods should be helpful at present when American railroads are embarking on experiments in co-ordinated operations.

British railways, which have always provided collection and delivery services, obtained, in August, 1928, the necessary charter amendments to permit them to engage in extensive highway operations for the handling of both freight and passenger traffic. In

connection with the latter they have effected co-ordination by acquiring a financial interest in all the larger motor coach companies. It was found, however, that a similar solution would not apply to the freight traffic situation because of the numerous small trucking concerns and also because of the existence of trucks operated by firms or farmers for their own transport work. The problem was, therefore, to develop a highway freight service which would meet both the competition of the truck lines and that of the owner-operated trucks. The latter was regarded as more formidable and it was realized that to meet it the railways would have to offer a service more attractive and more economical than that which business houses and farmers could provide for themselves. It became necessary in this connection to approach each such shipper independently and, having determined by what margin the railways were failing to get his business, devise a plan to attract the traffic.

To induce merchants and manufacturers to abandon their trucking operations the railhead distribution center was introduced. Briefly, this plan involves the location of railroad-owned warehouses served by railroad motor trucks at concentration points throughout the country. Space in the warehouses is available to shippers who are thereby enabled to carry stocks at strategic points, the railroad performing all work such as controlling stocks, checking and accepting and executing delivery orders. Specialized services are also available such, for example, as the delivery of construction material to a new building site or the distribution of pipes for drainage projects.

Similarly specialized services for rural areas have been evolved. A network of motor truck routes has been established for the collection of farm products which are hauled to concentration points for forwarding by rail; in addition an extensive station-to-station highway freight business has been developed in rural areas. Where these rural services required it, special equipment has been installed as, for example, vehicles adapted to driving into the fields in order to effect a more economical handling of the sugar beet crop, and specially designed trucks for sheep and cattle. This penetration of the railway into off-track rural areas also brings indirect benefits since the truck drivers distribute railway literature and passenger service advertising pamphlets.

Meanwhile the competition of truck lines has been met by the installation of over-the-road trucking services; highway routes have supplanted unremunerative branch lines and on the railway itself operations have been speeded by the elimination of transfer stations. Finally, containers have been introduced and experimental tariffs for mixed carloads published. In short, it has been the policy of the British roads to encourage reliance on the railways for all forms of transport. In this connection the foregoing reveals that they have come to realize, as one observer put it, that "in the utilization of the highways as auxiliaries to the railways a policy of vigorous development is essential."

A Most Significant Railway Figure

During the wage negotiations in Chicago last week Daniel Willard, chairman of the Railway Presidents' Committee, gave to the representatives of labor a statistical statement regarding railway results in 1931, which was made public. There appeared in this statement one figure of the greatest significance, but which apparently has attracted little attention and caused little comment. This was the figure of \$89,000,000 representing the amount of "net income" earned in 1931.

In technical phraseology "net income" is the amount of earnings the railways make in any year in excess of operating expenses, taxes and all fixed charges. In other words, it is the amount of their earnings that is available for paying dividends on all their stock and for making improvements.

This figure of 89 million dollars is so significant because it is the *smallest* figure of the same kind that has appeared in railway reports since 1897 and represents the smallest amount of net income per share of stock ever known to have been earned by the railways of the United States.

The smallest net income per share ever earned before was in 1895, when it was \$1.53. In 1921, the worst year in railway history from the '90's until 1931, the net income of the Class I roads was about 316 million dollars, or almost four dollars per share. In 1931 it was only \$1.07 per share. This figure is made all the more startling by the fact that within the last decade the increase in the investment in the railways has been more than twice as great as the increase in their capitalization.

The total return earned by the railways in 1931 was about two per cent upon their total investment, but the return earned upon their stock was only slightly more than one per cent upon its par value, although because of conservative financing over a long period of years every share of stock represents a larger investment than it ever did before, and a much larger investment than it did even ten years ago.

Following several years of prosperity the average dividend paid upon railway stock in 1930 was about \$6.00—the largest in history. Since then almost every railway in the country has reduced or discontinued its dividends and the average dividend now being paid is probably about two dollars a share, or the smallest since 1899. If, as seems probable, other companies will have to reduce or discontinue their dividends, the average paid per share like the average earned per share in 1931 will soon be the smallest in all history.

While in 1931 the railways earned only 89 million dollars for all their stockholders, they paid approximately \$310,200,000 in taxes to the local, state and federal governments. This was more than they ever paid in any year prior to 1923. The net income earned by them for their stockholders was 71½ per cent less than in 1921, the last previous year of severe de-

pression, while the taxes they had to pay were 12½ per cent greater. Could any other two facts so well illustrate that the greatest economic problems confronting the American people are the problems of restoring the earning capacity of the railways and of compelling their local, state and national governments to reduce taxation and stop the squandering of public money, which makes present grossly excessive taxation necessary?

One Way to Insure Comparable Bidding

The call for bids for a new line project that was completed last year contained an announcement of a tour of inspection over the entire location in which the bidders were invited to participate. This trip, which was made by auto, horseback and on foot, depending on the terrain along various parts of the line, was so conducted as to afford a maximum of information relating to the work—the character of the country, the nature of the material to be moved and other physical conditions that affected the prosecution of the work.

On another road that has been carrying on an extensive program of grade revision and second-tracking it has been the custom, whenever additional work is to be undertaken, to conduct a party of prospective bidders over the line on a special train. Facilities for the examination of maps and profiles are provided in a business car and frequent stops are made for inspection, explanations and discussions of features of the work that embody particular problems.

This plan has much to commend it. If it results in added expense to the railroad, it is insignificant compared with the cost of the work to be done. It insures that all bidders are afforded equal opportunities to acquire a knowledge of the physical facts. It enables them to interrogate and ascertain the points of view of the railroads' ranking engineering and construction officers under auspices that are favorable to a common understanding. It gives assurance that each bidder has an equal opportunity to prepare an intelligent bid. But above all, it affords the maximum opportunity for the clearing up of possible sources of misunderstanding before the contract is let rather than afterward.

Indexes to Volume 91

The indexes to the latest volume of the *Railway Age*, July to December, 1931, are now ready for distribution. Subscribers who desire copies should advise the New York office, 30 Church street.

Searching for Flaws in Rails

New York Central now
operates the latest
type of equipment
to detect trans-
verse fissures
and other
defects

C. B. Bronson, Assistant Inspecting Engineer, Second From the Left, and Crew, Alongside the New Detector Car of the New York Central



AFTER years of study and close co-operation with the late E. A. Sperry, in the development of the transverse fissure detector, the New York Central has placed in operation a detector car of its own, which incorporates the latest features in the art of rail flaw discovery. This fact, as well as a detailed description of the new car, were set forth in a paper presented before the New York Railway Club on January 15, by C. B. Bronson, assistant inspecting engineer, New York Central lines.

The first part of Mr. Bronson's paper dealt at some length with the history of the development of rail flaw detectors, particularly in so far as the New York Central was concerned, beginning with the invention of the track recorder by Dr. Dudley in 1878 and concluding with the invention and development of the Sperry transverse fissure detector. The main portion of the paper, however, was concerned with the new unit of equipment which was put in service on this road recently. An abstract of this part of the paper follows.

Many Miles of Rails Tested on N. Y. C. Lines

Following the use of the A.R.A. detector car on a number of roads, an immediate demand arose for the services of such a car. As a result, the Sperry Company started building additional equipment in 1928 and developed a service organization to fulfill the need which had arisen. The New York Central was one of the early applicants for this service, having arranged for the use of one of the double units late in 1929. Actual testing was started at Albany, N. Y. on January 2, 1930, and subsequently, a large mileage was covered by several of the cars on various parts of the system. Continuing in the rail inspection in 1931, a total of over 5,500 miles of tracks were covered. In this work, the main tracks between New York and Chicago were fully covered, the line from New York to Buffalo, N. Y. was tested at least twice, and a third test was made on about 200 miles of track.

In addition, arrangements were made in June, 1930, for the installation in a track near Fonda, N. Y., of a number of the rails which had been removed from service after fissures had been detected in them by the car. Once each week representatives of the Sperry Company made hand checks of these fissures with portable ap-

paratus to determine their rate of growth. This work was carried on for about ten months, when a second installation of fissure rails was made at Beacon, N. Y., in June, 1931, where they would be subjected to different conditions of traffic and speed.

The Sperry Company and the New York Central continued their co-operative research and test work until early in 1929, when arrangements were made to obtain a single-unit, self-propelled, rail-flaw detector car. This is the car that was placed in service recently.

Differs in Many Respects

The new car was to differ in so many ways from anything previously constructed that a large amount of study was given to the working out of the details of its design. The first step, which was started in April, 1930, was the building of the car body and the gas-electric power plant for the propulsion of the car, which was done under the direction of the J. G. Brill Company. The second step involved the fitting up of the car for the purpose intended, which was done in the West Albany shops of the New York Central. When this work was completed, the car was shipped to the plant of the Sperry Company at Brooklyn, N. Y., where the detector equipment was installed.

Following an acceptance test over 50 miles of selected track, which was started on August 28, 1931, and which indicated that the equipment functioned with a high degree of accuracy, the new car was assigned to the jurisdiction of Arthur Knapp, inspecting engineer, rails, wheels and structural steel, New York Central lines. Regular testing commenced on September 29, 1931, and the car has been in constant service since, having completed the testing of the westbound track between Albany and Chicago and of the eastbound track between Chicago and Cleveland, Ohio. It is planned to make a complete survey of the main-line high-speed tracks between New York and Chicago, following which the car will be available for use generally on the extensive territory of the entire New York Central lines.

Details of New Detector Car

The new car is completely equipped for self-propulsion, with double-end control for operation in either direction. The length over the ends is 73 ft. 4 in., with the

trucks spaced 54 ft. 6 in. center to center. The car is of ample weight (150,000 lb.) for the consistent operation of signals and meets all requirements of the signal department. Furthermore, it is equipped with automatic train control, a feature not incorporated previously in any cars of this kind.

In the extreme front end is a compartment housing the car propulsion power plant. This plant comprises a 350-hp. Hall Scott gas-electric unit, which has a range of speed from 5 miles an hour while testing, to about 55 miles an hour when not testing. Immediately back of the power plant compartment are the living quarters for the crew, and directly beyond these is a compartment which houses the engine-generator unit of the detector apparatus. The generator, which is of the same general type that is provided on other Sperry cars, furnishes current for the contact brushes of the detector equipment which travel along the tops of the two track rails. At the rear of the car is the recording compartment, approximately 19 ft. long, which is fitted with desk space, a repair and tool table, the relay and recording table of the detector equipment, and also with the control panel upon which are mounted the necessary meters and other indicating devices controlling the electrical features of the detector apparatus.

Standard detector car equipment was used wherever possible, so that in most respects the detector unit conforms closely to those installed in the Sperry Company's own cars. One of the illustrations shows a close-up view of the rail brushes and rigging. This equipment can be raised vertically, this movement being controlled by air from cylinders located on the floor of the car in the engine-generator compartment.

The car can be stopped and started as readily as the double-unit type of detector cars previously in service on the New York Central. In addition, several marked advantages have been noted in the larger testing unit, including those of flexibility in getting in and out of traffic, and of providing complete living quarters for the men as well as certain equipment maintenance facilities. Still other advantages of the larger unit on a railroad with the extensive mileage of the New York Central are the higher speeds possible when not testing, permitting the rapid transfer of the unit from one location to another, the consistent operation of signals, and automatic train control.

How Defects Are Detected

Briefly, the procedure in operation is as follows: The operator, who watches both the tape and the track as the car moves along at approximately five miles an hour, is constantly on the alert to check the indications shown on the tape against surface imperfections in the rail, such as burns, corrugations, flat spots, etc. If there is no surface evidence of a defect in the rail when one, two or three pen indications of the recording equipment occur, the motorman is immediately signaled to stop the

car, this being done by means of a push button within easy reach of the detector operator. The car is then backed up a sufficient distance so that a repeat run can be made. If the rail is defective, the indications on the second run are generally stronger than those received on the initial run.

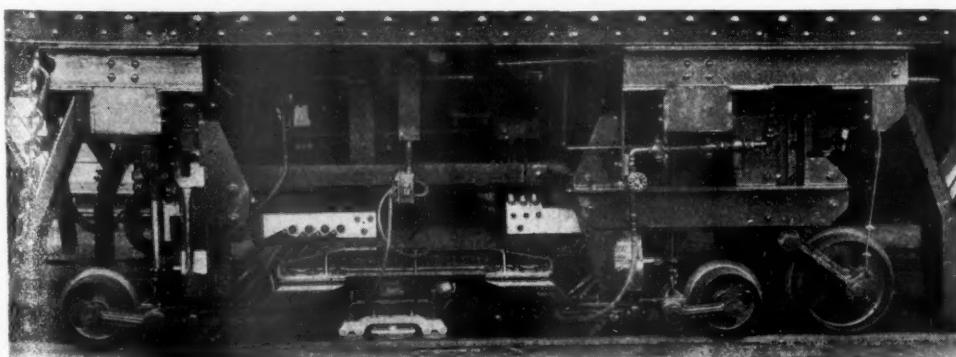
After the car has moved over the suspicious point in the check movement, it is again stopped and a thorough visual examination is made of the rail in the vicinity of the suspicious point indicated by the operators and track department representatives on the car. Points of suspicion in the rails are located approximately by means of guns which spray paint directly on the webs of the rails where flaw indications are received. In the eye inspections, a search is made for cracks, crushed spots, slivers or other surface conditions which may have caused the pen indications. After such an inspection at a specific point, the car is again backed up far enough to permit conductors to be clamped to the rail head for a hand test. This test is made by using a sliding set of contacts connected to a portable galvanometer, and indicates the exact size and location of any defect encountered. If the hand check shows a defect, the track forces are notified immediately to remove the rail. The defective rail is given a serial number and a record is made of its exact location as well as the name of the manufacturer, date rolled, heat number, etc.

Disposition of Defective Rails

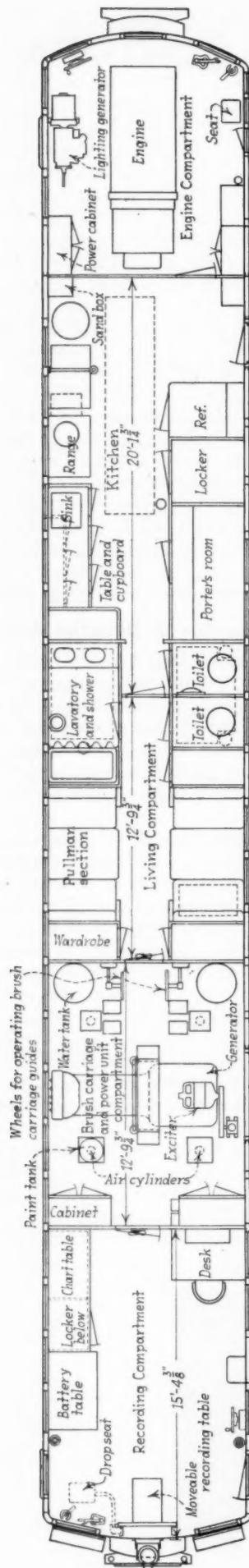
Formerly, we assembled all rails indicated as defective and removed them to division headquarters or other points. Later, all rails containing interior transverse fissures or other defects not readily visible on the surface, were fractured. It is now required that each supervisor fracture all defective rails shortly after their removal, to provide a ready check on the efficiency of operation of the car.

In addition to the removal of rails which show clear-cut defect indications, it has been found expedient to remove some rails which give peculiar indications on the tape that leave some doubt as to the type of defect. This is done in order that these rails may be given special study. Ordinarily, it is not difficult to fracture the rails at the points of indicated defects, but cases have arisen where the rail fails to fracture when bent at a point indicated by the hand test. In these cases the rail is cut to form a piece extending six inches each side of the indicated point of defect and the head is wedged apart lengthwise of the rail by a cold chisel. As a result, fissures are readily disclosed in many of these cases.

The crew to man the new car consists of a motorman or engineman, two operators to handle the detector equipment, a cook, a conductor and a flagman. A representative of the maintenance of way department, generally an assistant supervisor of track, is also present on each subdivision, and makes the necessary



A Close-Up View of the Rail Contact Brushes and Rigging, as Well as the Flaw Searching Unit



Floor Plan of the New York Central's New Rail Flaw Detector Car

arrangements with the track forces for the removal of defective rails.

Results of Detector Operation on N. Y. C.

With accumulated experience, improvement has been noted in the efficiency and accuracy of the Sperry cars, and the detector operators likewise have become more proficient in interpreting the indications shown on the record tape. The rate of growth of fissures, split heads, crushed heads, etc., is still a matter of considerable conjecture, which makes the need for frequent testing apparent, especially to those directly and closely associated with rail service problems. The question of the frequency with which tests should be made is dependent upon many factors, among which are the traffic density, loading conditions, speed of traffic, track alignment and grades, and the service history of each particular stretch of rails. In general, it is our aim to survey principal and high-speed tracks once each year.

The original aim and ambition of Dr. Sperry was to perfect a car which would locate in rails the track fissures which had developed to an area equal to 20 per cent or more of the head area, which fissures cover the more important phase of the problem. With the greater perfection of the detector equipment, the cars have been able to locate fissures as small as 3 per cent of the head area. Furthermore, to the surprise of Dr. Sperry and others, the cars have been able to detect a variety of rail defects, including splits in the web and base breaks, which had been considered outside the province of this type of testing.

A study of the defective rails detected by the various cars used on the New York Central during the two years of testing, in which over 6,976 miles of track were covered, developed that approximately 39 per cent of the rails detected as defective contained defects of the interior transverse-fissure type, while 61 per cent contained crushed or split heads or other similar defects. The percentage of questionable rails per mile of track varies on the various divisions, but records accumulated on the New York Central lines show that the cars have detected an average of one fissured rail in every 19 miles of track; an average of one defective rail containing a split or crushed head or a more or less similar defect in every 10.7 miles; and a rail containing a defect of some character in every 7 miles. The concealed defects detected by the Sperry equipment are generally in the initial stage of development. The rails are, of course, replaced immediately by tested rails to insure against any possibility of installing questionable rails in tested track.

It can readily be appreciated from the preceding description and illustrations that the new detector car on the New York Central was quite costly in itself and involves considerable expense for operation and maintenance. However, these costs seem fully justified in view of the added safety and protection afforded and are in line with the general policy of the New York Central to promote maximum safety in rail transportation.

A STATIONARY STEP LADDER FOR UPPER BERTH PATRONS is now in experimental use on Pullman sleeping cars of several overnight trains of the Pennsylvania between New York and Washington, D. C. Fixed securely to the berth, the new ladder remains in place throughout the night and enables the upper berth occupant to get in or out of the berth at any time without the necessity of calling the porter to set up a temporary ladder. The ladder is folded into the bedding compartment of the upper berth during the day.

C. & N. W. Platform Operation Sets Fast Pace

Tractors and trailers vital factor in handling large volume of freight at modern transfer



Trailer Trains Are Made Up on the Unloading Platform on the "Fly"

THE Chicago & North Western l.c.l. freight transfer at Proviso, Ill., the largest in the world, employs the most modern facilities for handling freight, and as a result has set a fast pace for platform operation. This transfer, which concentrates the freight handling of the several stations in the Chicago territory, has produced many economies besides speeding up the movement of l.c.l. trains as described in the *Railway Age* of May 30, 1931, page 1060. Among the facilities employed are tractors and trailers which have made it possible to handle an average of well over 50 tons per check gang per day.

The transfer warehouse proper is a one-story wood and steel structure covering a ground area of about 21 acres, practically all under one roof, well illuminated by full length systems of skylights equipped with ventilators, as well as an adequate electric lighting system. This structure also houses a concrete block building located at the center of the house which is used for the various activities necessary to the complete operation of the transfer, such as a foreman's office, a cooper shop, storage rooms, repair shops, lockers, lunch and toilet rooms, etc.

In this structure are 15 platforms which vary in length from 504 ft. to 1,420 ft., while adjacent to the building are three others which accommodate a gantry crane, an ice platform and a platform for receiving merchandise delivered by truck. The physical features of these platforms are as follows:

Warehouse Platforms

Classification	Number	Dimensions
Loading platforms	7 under main roof	1,360 ft. by 22 ft. each
Unloading platforms	2 under main roof	1,420 ft. by 40 ft. each
Unloading platform	1 under main roof	680 ft. by 35 ft.
Combination platforms	2 under main roof	1,360 ft. by 22 ft. each
Cross-haul platforms	3 under main roof	504 ft. by 20 ft. each
Unloading platform	1 gantry crane	380 ft. by 22 ft.
Loading platform	1 ice platform	160 ft. by 22 ft.
Door-receiving platform	1 west end of house	450 ft. by 20 ft

The cross-haul platforms, located in the center of the building, and the run-ways at each end of the building, are equipped with a total of 24 electrically-operated

lift bridges to permit the switching of cars. These bridges rest on concrete bases and are raised by four motor-driven screws to a height of 18 ft. in three minutes.

The platforms are served by 24 tracks which have a total length of about six miles. The characteristics of the tracks are as follows:

Classification	Number	Length
Loading tracks	14	1,400 ft. each
Loading tracks	2 (Including ice platform)	1,560 ft. each
Unloading tracks	2	1,420 ft. each
Unloading tracks	4	1,400 ft. each
Unloading tracks	1	680 ft.
Unloading tracks	1 (Crane platform)	320 ft.

The entire warehouse has a capacity for 700 cars, arranged as follows:

Warehouse Car Capacities

14 Loading tracks	30 cars each	420 cars
2 Loading tracks	34 cars each	68 cars
4 Unloading tracks	30 cars each	120 cars
2 Unloading tracks	34 cars each	68 cars
1 Unloading track	15 cars	15 cars
1 Unloading track (Gantry crane)	9 cars	9 cars

The merchandise delivered to the transfer is handled by 50 three-wheel gasoline-driven tractors, 4,600 four-wheel automatic coupling trailers, 1,000 of which are used to carry freight from Grand avenue and Sixteenth street to Proviso; 64 four-wheel hand-operated trailers; 150 two-wheel hand trucks; and 22 six-wheel heavy duty dollies. The tractors, manufactured by the Clark Tractor Company, are equipped with Le Roi 12 hp. gasoline motors which consume about 3½ gal. of gasoline and 1½ pts. of lubricating oil per day. The trailers, built by the Mercury Manufacturing Company, are equipped with roller bearings and require little attention. Other equipment employed in the warehouse includes a 10-ton hoisting crane equipped with 1 electric magnet, 4 grab hooks and 3 chains, and 2 portable electrically-operated ice hoisting machines.

The personnel of the warehouse includes an agent who is in full charge of the warehouse and freight offices; an assistant agent who is in charge of the warehouse; two general foremen, one of whom has

supervision of the handling of waybills, and the other of whom has jurisdiction over the handling of freight; and 10 platform foremen. Of the latter, two have direct supervision over the unloading platform, seven are in charge of the loading platform and one is in charge of personnel. In addition, an assistant foreman takes care of the office work connected with the handling of the eastbound movement.

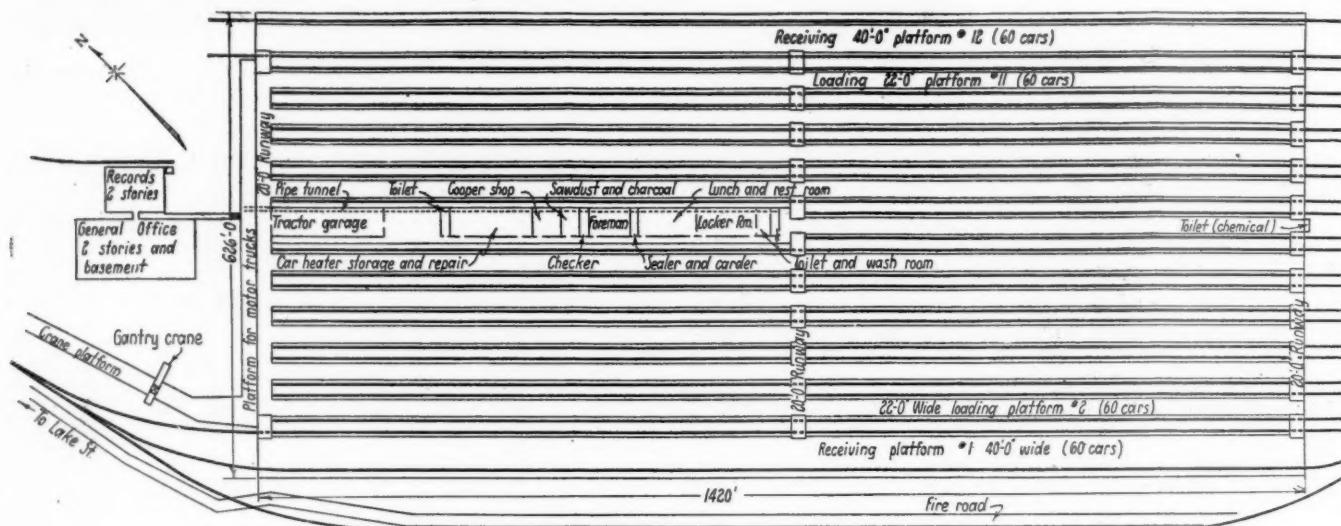
Speed of Waybill Preparation Must Equal That of Freight Handling

Because of the rapidity with which freight moves through the warehouse and in order to avoid delay, special arrangements are often provided for delivering waybills to Proviso. Waybills for I.c.l. merchandise collected in Chicago are sent to Proviso with the cars, or just ahead of the cars by special messenger or by passenger train. Waybills for merchandise received from connecting lines and destined to points on the North Western, and waybills for shipments from points on the North Western and destined to connecting lines, covering merchandise which is transferred at Proviso, are sent to Proviso by railway mail on passenger trains,

the car to show the class of merchandise, and the cars thus side-marked are easily distinguished. These cars are pushed by shunting engines from the receiving yard to warehouse unloading tracks Nos. 1, 2, 23 and 24, located on each side of the warehouse.

As cars arrive at the Proviso receiving yard, they are switched into a special yard where they are lined up for placement in the freight house. When a train of transfer merchandise cars is ready to be placed in the house, a list of the cars to be placed is telephoned to the line-up clerk in the foreman's office. The waybills for these cars are pulled from the storage racks, the receipt stamp is placed on each waybill and the bills are taken to the bill distributor's office on the unloading platform by a messenger on roller skates. At this point, the bills are handed to the check gangs, who proceed to the cars and begin unloading them. When a check gang completes the unloading of a car, it returns the bills to the bill distributor's office and secures bills for another car.

As soon as any one track, the capacity of which is 33 cars, is emptied of merchandise, a new set of cars is switched in on that track, shoving the empties out



The Platforms Were Arranged to Insure Efficient Trailer Operation

by United States mail and by air mail service. Waybills from connecting lines are delivered by the connecting lines to the railway mail exchange located in the Transportation building, Chicago, ahead of the cars, and are forwarded from Chicago to Proviso either by passenger train or special messenger service, depending upon the time available.

When the waybills covering freight to be forwarded arrive at the Proviso transfer, they are recorded, the tonnage is taken from them for pay-roll purposes, and they are grouped in storage racks that are indexed alphabetically according to railroads to provide ready reference. Here they are held until the cars are placed in the freight house.

Merchandise received in trap cars originating on the North Western as well as on the various belt lines in Chicago, and merchandise cars received from connecting lines for points beyond Chicago, move under running slips or "memo waybills" showing only the destination, the car number, the point at which the freight is to be transferred and the point of origin, and on its arrival at Proviso is quickly identified from the slips. A large card is then placed on the side of

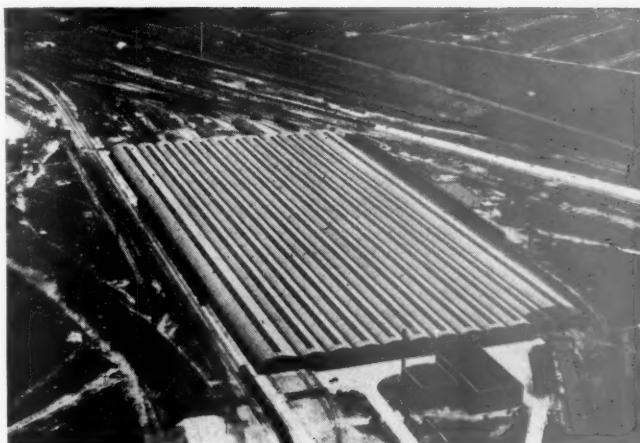
at the other end. The work is so arranged that from one to three tracks of merchandise are in the house at one time, so that the unloading gangs will not be idle.

Checkers take the bills from the distributor's office. After the freight is checked, the bills are returned to the foreman's office in the center of the warehouse by a messenger who is also equipped with roller skates. Here the outbound loading car numbers are stamped on the waybills, the information having been placed on each waybill by the checkers at the time of unloading. From the foreman's office, the waybills are then sent to the billing forces through pneumatic tubes; and after the billing and recording is completed and the bills for each outbound car are consolidated, they are carried to destination usually by passenger trains, U. S. mail or air mail, although in some instances they are sent to the yard office and travel with the cars.

Freight Handling Segregated into Three Operations

The transferring of the I.c.l. freight at this station is segregated into three separate and distinct operations—unloading, classifying and hauling, and loading or

stowing. Unloading is performed at platforms located at both sides of the building, while the loading is accomplished at the platforms located in the center of the building. The unloading operation is performed by 35 check gangs, consisting of a checker, a caller and a trucker. These men call and check the freight from the car floor, placing each shipment on an individual trailer. They also mark and "vericheck" the freight to the proper loading unit, indicating the track and spot number, place the vericheck in a pipe rack on the trailer and pull the loaded trailer from the car on to the unloading platform. Here the trailers are arranged with their ends facing the central portion of the platform so that they can be pulled from position and coupled onto a trailer train as it passes down the center of the platform at a speed of about four miles per



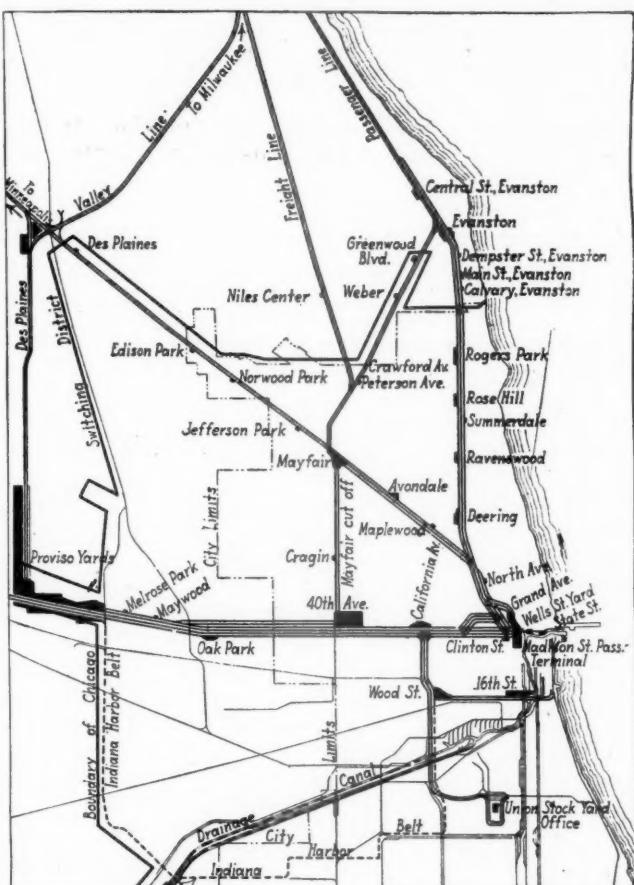
The Warehouse and the Agent's Office

the trailers. When returning to the unloading platforms, each crew is required to pick up empty trailers and return them for reloading. These crews are compensated on an hourly or day-work basis.

The loading or stowing operation involves the unloading of shipments from the trailers and the loading or stowing of the merchandise into cars. It is performed by 70 stowers or stevedores and their 30 helpers under the supervision of a platform foreman. These men are required to note carefully all marks and verichecks to insure the proper forwarding of each shipment, perform blocking when necessary, close car doors and seal the platform side of the cars at the close of the day. They are paid on a tonnage or piece-work basis, with a guaranteed minimum daily wage.

To insure understanding, cars for the various destinations are placed at the same location each day, varied only as is necessary to take care of overflow business. In addition, each checker, stower and foreman is provided with charts that show this car set-up.

When a shipment has been checked to the improper loading unit or outbound car, the error is detected by the stower at the loading platform who examines the forwarding marks on the packages and the loading marks on the vericheck before placing the shipment into the outbound car. The stower immediately reports the fact to his platform foreman who re-marks the shipment to the proper loading unit and makes a detailed record of the change on the original vericheck. This vericheck is then forwarded to the billing office where the billing is located and the proper corrections



Twenty-Six Stations in the Chicago Territory Feed Freight to the Proviso Transfer

hour. The check gangs operate on a tonnage or piece-work basis, with a guaranteed minimum daily wage.

The classifying and hauling is performed by 32 motor crews, consisting of one motorman and one conductor, each team using a three-wheeled gasoline tractor which handles trains of from 20 to 25 loaded trailers and often 40 or more. Each crew is assigned to certain runs or sections of a loading unit. They enter the unloading platforms at one end and while moving through, select the loaded trailers marked for the runs in their assignments and couple them to the moving tractor. When the train is made up, it includes only those trailers destined to a certain section of the loading units. This train then proceeds along the cross-haul platforms at the center of the building to the proper tracks, pulls onto the loading platform and cuts off



A Section of the Office in Which Waybills Are Prepared

are made to insure the forwarding of the billing to the same destination as that of the car into which the shipment is loaded.

During the course of the day's business, it frequently becomes necessary to load additional outbound cars for certain destinations when regular cars become fully loaded. Notice of such additional or overflow cars is immediately posted on the proper bulletin boards for the information of the check gangs performing the unloading and verichecking of freight from transfer cars. However, if shipments are verichecked to and arrive at the regular loading or outbound car and it is found necessary to load them into an overflow car for the same destination, the subsequent procedure to make the loading of freight and the forwarding of billing coincide is the same as that outlined for guarding against the misloading of shipments.

The magnitude of the transfer is best illustrated by the amount of freight handled, which in 1930 averaged 2,621 tons a day. The aggregate for the year was 802,108 tons, of which 601,615 tons was outbound and 200,493 tons was inbound. In 1929, the tonnage handled totaled 915,450 tons, of which 760,373 tons was outbound and 155,077 was inbound. The maximum daily tonnage for one shift since the opening of the station was 3,776 tons, but the transfer has handled over 3,900 tons in a day of 11 hrs. The maximum tonnage for one month, working on a one-shift basis, has been 88,949 tons.

During 1930 the number of shipments which made up the above tonnage averaged 13,990 daily, the total for the year having been 4,276,303, of which 3,574,656 shipments were westbound and 701,777 were eastbound. In 1929 the total was 4,649,242, of which 3,847,499 shipments were westbound and 801,743 were eastbound.

Expressed in another way, the transfer in 1930 unloaded 452 cars a day, or 138,371 during the year, and loaded 421 cars a day, or 128,706 cars during the year. Of the cars unloaded in 1930, 102,959 were westbound, and 35,412 were eastbound, while of those loaded 110,006 cars were westbound and 18,700 cars were eastbound. To handle this merchandise in 1930, 245 employees were engaged in the agent's office which is located adjacent to the warehouse and which performs all clerical work. Of these, 185 worked on I.c.l. records and 60 were engaged in handling carload waybills. A total of 474 employees were engaged in the warehouse.

Motorized Equipment Employed To Further Economic Operation

Because of the size of the transfer, the volume of traffic and the necessity for transferring merchandise in the least possible time, tractors and trailers have been installed and are the main factors in the operation of the transfer. During 1930, the freight transferred (unloaded and loaded) averaged 12½ tons per man per day, even though the distance the freight was trucked from the unloading platform to outbound cars was from 0.5 miles to 0.7 miles.

Since the present method of handling freight is entirely different from the old method, by which the merchandise was handled at several different stations, it is impossible to compare the costs of hand trucking and motor trucking at this transfer. However, there is much evidence to show that, even if schedules were ignored and hand trucking was employed, the cost would be more than at present. Now 35 freight handling gangs of 3 men each are employed, whereas if hand trucking were used, 40 gangs of 7 men each would be

required because of the long distance over which freight is trucked.

While 13,980 shipments, averaging approximately 375 lb. each, are handled daily in the warehouse, clerical employees in the agent's office, a two-story brick building with a two-story record vault adjacent, prepare waybills, applying the rates and extending the costs. This work is carried on all day, the major portion after 11 a. m. Because of the tight schedules for handling freight, this office must complete the waybills for the day's traffic before 10:30 p. m. It also receives many requests from shippers to trace cars and supply other information.

To match the speed of waybill preparation with that of freight handling, several innovations are employed. Teletype machines transmit instructions for reconsignments, diversions, etc., between the main office in Chicago and Proviso. These machines have eliminated many errors which are bound to occur when information is transmitted by telephone, and have also resulted in a saving of labor. Formerly two men at each end sat at telephones all day receiving and sending instructions, while at present one man at each end is able to accomplish the same amount of work.

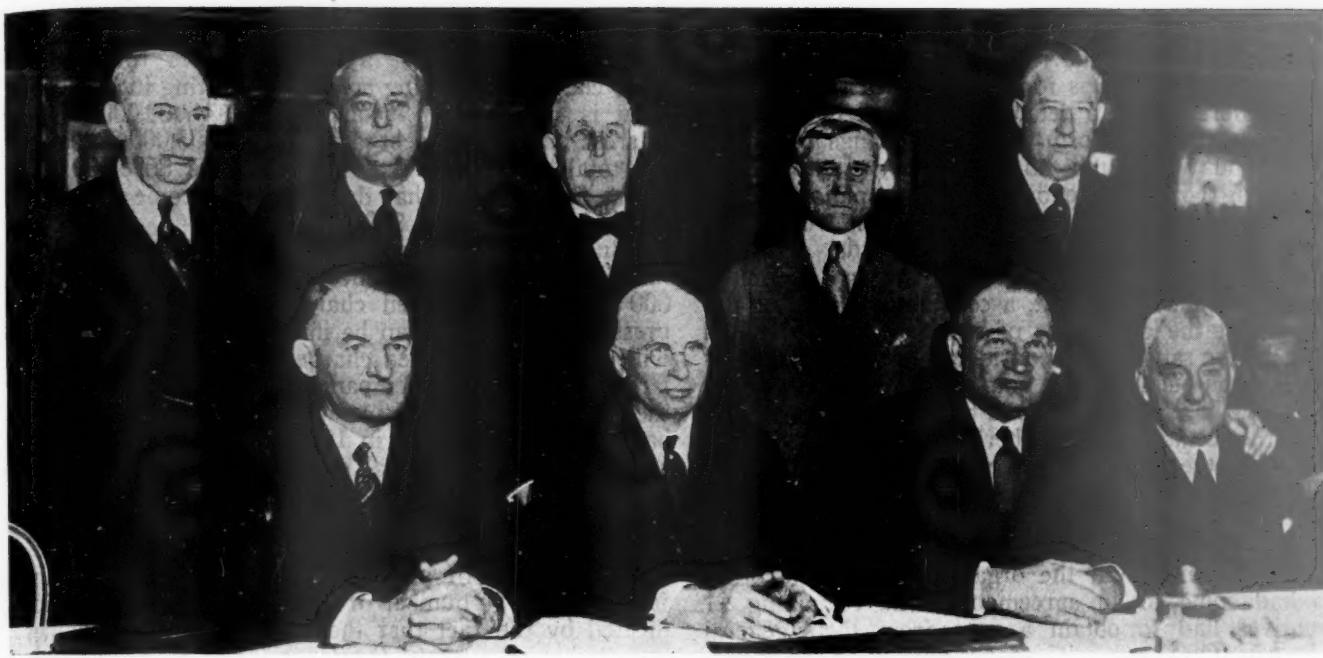
To speed up and, at the same time, to eliminate much of the clerical work, a Burroughs' bookkeeping machine is used. This machine makes out freight receipts and abstracts at one writing, whereas formerly one typist made out the receipts and later another handled the same records to make out the abstracts. The tables, shelves and racks used in sorting waybills are equipped with rubber tired wheels, so that they can be placed in the most convenient locations when needed.

Another important function is the cleaning of cars. Approximately 400 cars are cleaned each day, the work involving the removal of nails, blocks and dirt, and in some cases the scrubbing of floors. The major part of the cleaning work is handled under contract by the mechanical department and is done on a nearby repair track, although some cleaning is done by the forces in the warehouse. When it is necessary to scrub car floors, a scrubbing machine is employed. This consists of an enclosed electrically-driven brush to which water is supplied through a hose attached to the brush housing. Several solutions for cleaning have been developed and the type used is governed by the substance to be removed from the car floor.

A cooper shop located in the warehouse has also proved a valuable asset. Here damaged containers, the major portion of which are received from connecting lines, are repaired and rebuilt. It is estimated that this shop, by repairing or rebuilding containers and thus preventing damage to the contents, saves between \$500 and \$1,000 a day.

Many Economies Effected

By consolidating the handling of freight at one transfer, the North Western has effected many economies in its freight handling. It has reduced the cost per ton, has eliminated the expense of rehandling at several points, has speeded up the handling of freight so that fast schedules can be maintained with regularity, has reduced the number of cars used by approximately 150 a day, and has reduced the clerical work incident to the preparation of waybills. In addition, it has increased the loading per car from 5.4 tons to over 6 tons. In 1930, the freight handled westbound averaged 12,137 lb. per car and the eastbound 15,612 lb. per car. During October, 1930, the average loading eastbound was 17,069 lb. per car.



The Railroads' Committee of Nine Presidents

Left to right, standing: J. E. Gorman, C. R. I. & P.; L. W. Baldwin, M. P.; C. A. Wickersham, A. & W. P.; H. D. Pollard, C. of Ga.; and C. E. Denny, Erie. Seated: L. A. Downs, I. C.; Daniel Willard, B. & O.; J. J. Pelley, N. Y. N. H. & H.; and A. C. Needles, N. & W.

Unions Deliberate on Wage Cut

Railroads make final reply to labor leaders and await their decision

When this issue of *Railway Age* went to press late Thursday evening, the negotiations between the committee of nine executives, representing the railroads, and the leaders of the railroad labor organizations were still in progress. The longshoremen's union had withdrawn, but it was understood that 19 of the 20 remaining organizations had voted to accept a reduction of 10 per cent in wages for a period of a year.

The prolongation of the negotiations was caused by the attitude of the Brotherhood of Railroad Trainmen. Representatives of this organization voted to accept the reduction of 10 per cent for one year, but in addition asked that the arrangement should specifically ask that the railroads parties to the negotiations should not undertake again to reduce wages for a period of one year after the termination of the agreement.

This resolution was adopted late in the afternoon of Thursday, January 28. Following its adoption, a conference with the railway presidents was requested by the labor executives for 9:30 a. m. Friday, January 29, presumably to discuss this resolution of the Brotherhood of Railroad Trainmen. There seems not the slightest

probability that the railway presidents' committee will agree to any such proposal. In view of the fact that but one of 20 of the labor organizations seemed unwilling to agree to the 10 per cent reduction for one year, it appeared, at the time of going to press, that general agreement on such a reduction might be reached before the end of the week.

NEGOTIATIONS between the railway presidents and the officers of the brotherhoods continued almost without interruption from the opening of the meeting in Chicago on January 15. On January 19, as reported in last week's issue, D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen, asked the railroad presidents for specific information concerning the status of railway finances in support of their demand for a wage reduction. The preparation of this information and its assembly into a statement occupied all of that afternoon and all of January 20, and was presented at joint meetings on January 21 and 22 by Daniel Willard, president of the Baltimore & Ohio and chairman of the railroad presidents' Committee of Nine. A reply by Mr. Robertson was made on January 23, indicating that if the employees accept the cut in wages it would be because of the pressing nature of the situation rather than from the standpoint of "abstract right and justice."

Following a session in which Mr. Robertson's statement was presented, the representatives of the unions met in individual groups for further discussion and for the consideration of a rebuttal presented by the railways in typewritten form. These meetings continued from Sunday through to Thursday, January 28, there being considerable difference of opinion among the brotherhood leaders as to the position which they should take with respect to the railroads' demands. Many representatives expressed strong sentiment against acceptance of a cut, a considerable number declaring that the committee of railroad presidents had failed to give satisfactory consideration to the proposals submitted on behalf of the employees. On the evening of January 25, the executives of the 21 unions conferred to poll the results of the brotherhood meetings, at which time 10 of the 21 executives were ready to announce their action, but none of the 10 indicated what the decision would be. Eight of the 10 executives ready to act had been given full authority to act without consulting their men and the organizations of the other two had come to an agreement. The remaining 11 executives had to obtain a vote from their general chairmen. On January 27 a large portion of the unions had reached a decision, but the remaining organizations continued to discuss the wage reduction.

Willard Depicts Railways' Plight

In the statement read before the joint meeting on January 21 and 22, Mr. Willard presented a statistical analysis of the present financial situation of the railroads, stressing the depreciation of railway securities and the resulting influence of this on the stability of life insurance companies and banks which are large holders of railway bonds, and on hospitals, universities and colleges which derive fully one-half of their revenues from endowments, a large part of which are invested in railway securities.

He contended that the present status of the railroads is the key to the current business situation as a whole, and that the presidents of the railroads and the representatives of labor were not meeting to trade but to study the problem in its general aspects and to decide on the solution of a desperate problem that directly concerned the railroads and their employees and indirectly the whole country. He insisted that all taking part in the negotiations were trying to deal with the problem in terms of quality and justice. He pointed to the depressed activity in industry and showed how the steel, coal, oil, copper and lumber industries, particularly, depend upon the railroads for business and that it is essential to increase the net earnings of railroads and restore their purchasing power.

"To make improvements and carry on operations," he continued, "the railways have to make large purchases of equipment, materials and supplies. The best information obtainable indicates that their purchases of equipment, materials and supplies from manufacturers were reduced from \$1,350,500,000 in 1929 to \$639,000,000 in 1931, or 53 per cent; their purchases of fuel were reduced from \$364,392,000 to \$224,000,000, or 39 per cent; and their total purchases of all kinds were reduced \$851,892,000, or 50 per cent, from 1929 to 1931, as compared with the reduction in their payroll of 27 per cent."

Many Roads Threatened with Bankruptcy

"In spite of the enormous reduction that has been made in operation expenses," he said, "many of the carriers are threatened with bankruptcy because of inability to pay their fixed charges or to meet the prin-

cipal of obligations that are coming due for payment. The total net income in 1931 available for paying fixed charges—including both net operating income and what is called 'other income'—was \$74,000,000. The interest on funded debt alone was \$495,000,000, and the total amount of fixed charges was \$695,000,000. These figures show that the total net income exceeded fixed charges by only \$89,000,000.

"But this is not the complete picture. There were 72 individual railway companies which failed by \$90,000,000 to earn their fixed charges in 1931, and unless present net earnings can be increased the number that will not earn their fixed charges in 1932 will be much larger. The railway companies that are failing to earn their fixed charges are plainly in danger of becoming bankrupt. In addition, in 1932 there will become due and payable the principal of \$405,000,000 of railroad mortgage bonds, equipment trust obligations and other loans. These obligations must be satisfied to avoid bankruptcy.

"The number of persons who would be directly injured by a large number of railroad bankruptcies is indicated by the fact that the life insurance companies report that they own \$3,000,000,000 of railroad bonds and have 50,000,000 policy holders. The mutual savings banks report that they own \$1,700,000,000 of railroad bonds and have 12,500,000 depositors. The life insurance companies and mutual savings banks together own \$4,700,000,000 of railroad bonds, which help to support and protect 50,000,000 life insurance policies and the savings of 12,500,000 depositors in savings banks.

"The present financial condition of the railroads is a matter of vital importance to everyone connected with the railroad industry as well as the entire American public. An industry that is unable to meet its fixed charges with a reasonable margin is virtually without credit, and is, therefore, unable to raise new capital on justifiable terms to meet bond maturities or to make improvements. An industry that cannot make improvements cannot employ men in making improvements. Consequently until the credit of the railroad industry, which has been so seriously impaired, is restored, the ability of railways to give employment will be greatly restricted. They are also unable, under present conditions, to make adequate expenditures upon maintenance, and as long as this condition exists it will also greatly restrict employment by them.

"The railways in making improvements and maintaining their properties normally buy very large amounts of equipment and supplies from manufacturers, which indirectly gives employment to many thousands of men. Their inability to make improvements and do adequate maintenance work, therefore, curtails employment not only on the railroads themselves, but throughout a large part of the industry of the country.

"We believe a reduction in the compensation of all persons engaged in railway service is an essential step toward enabling the railways to improve their credit, increase their employment and purchases, and thereby contribute toward a general revival of business."

Robertson Says Reduction Not Demanded "in Justice"

In replying to Mr. Willard's presentation of the railroad financial situation, Mr. Robertson took exception to the manner in which income was derived. He said that while it is the duty and obligation of a railroad management to provide the income necessary to pay fixed charges, it is also the obligation of the organizations of the employees to insist that somewhere and somehow the income must be provided to meet the fixed charges of the employees.

"We," he continued, "have presented our position, in answer to the statements of the presidents' committee, for the principal purpose of making it clear that in our opinion a balanced consideration of the interests of investors, the public and the employees must result in the conclusion that as a matter of pure right and justice the railway employees could not be called upon and should not be called upon to contribute 10 per cent of their meager earnings for the benefit of other interests in the railroad industry. But in making this statement we are aware that we are living in a world not always governed by standards of abstract right and justice. We have been presented by the managements of the railways with a courteous request for aid in solving the urgent problems with which they are confronted. We are deeply concerned with the welfare of the industry and could not avoid giving serious consideration to the argument presented, that unless the employees make a substantial contribution to the industry as a personal sacrifice, the present health of the industry may be further impaired and even its future capacity to provide a service for the public and a livelihood for the employees may be seriously impaired. We must candidly state that we do not believe the arguments and statistics presented by the presidents' committee demonstrate the justice of the request.

"We must undertake its consideration from the standpoint, not of abstract right and justice, but in order to determine whether the pressing needs of the situation compel us to the conclusion that we should volunteer a contribution to advance the common interest of management and labor in improving the health of the industry. And, in undertaking consideration of this problem we wish to discuss it fairly and candidly.

"In the first place, we do not believe that a reduction of earnings is required by any standard of exact justice. Let us rather assume that both the representatives of management and labor have an ungracious task to perform, even in raising and considering this question.

"In the second place, let it be understood that a humane regard for the value of human life, as well as a practical consideration of the health of the industry and the morale of its workers, requires that management should be at least as zealous in providing additional employment, in reducing part-time employment and in relieving unemployment distress, as in solving its financial problems."

Presidents' Final Reply

Following Mr. Robertson's statement on January 23, the railways prepared a typewritten statement, copies of which were distributed among the union representatives. This took the form of a statement, in turn, of each of the items in the counter-proposal made by the brotherhoods, followed in order by a reply giving the attitude of the railroads. The statement is given in full below:

Item 1

Stabilize employment by assuring one year of employment to the necessary employees in every class.

(a)—This stabilization should include provisions for putting to work as many men as possible consistent with maintaining satisfactory conditions in the respective classes of employment.

(b)—The necessary stand-by forces should also be assured of a minimum amount of part-time employment.

Reply: We agree that whatever may be practicable should be done to remove the feeling of uncertainty as to employment which may exist at the present time in the minds of many who are now employed, either upon a whole-time or part-time basis. Varying conditions make it necessary to deal with this question by local negotiation between management and men on each railroad. Accordingly the railroads will

carry on such negotiations for the purpose of stabilizing employment for such periods and to such an extent as conditions may justify. This does not contemplate assurance of pay for service not performed unless covered by present agreements.

Item 2

Since the six hour day is necessary and must be instituted to absorb the existing number of experienced employees without reduction of compensation, a Commission should be created to determine the ways and means of applying this principle to the different classes of employees. * * * * *

Reply: For reasons which were fully explained by the chairman of our committee we find ourselves unable to accept your conclusions that the six hour day is necessary and that it must be instituted in order to absorb the existing number of experienced employees without reduction of compensation. Consequently, we would be unwilling to recommend the appointment at this time of a commission to determine ways and means of applying this principle to the different classes of employees.

Item 3

Joint action should be undertaken between managements and employees to promote—

(a)—One billion dollar United States bond issue for grade crossing elimination on main traveled highways, one-half cost to be borne by government as improvement of interstate highways, one-half cost to be borne by railroads to be repaid by payment of interest and sinking fund payment to retire bonds in 50 years.

Reply: We doubt the wisdom of recommending to the federal congress at this time the appropriation of one billion dollars for the purpose set forth in your program. The requirements of the several states as to the division of the cost of grade elimination are in our opinion in many instances inequitable. The employees can assist materially in seeking revised legislation providing for a more equitable division of expense of grade elimination, between the public and the railroads, and we would be glad to have their co-operation in that connection.

(b)—Regulation of motor transportation and freight forwarding companies; including provision for employment of furloughed railroad employees.

Reply: We believe our views are in accord with yours concerning the fair and proper regulation of motors engaged in highway transportation. We do not think any unfair or unjust burden should be placed upon transportation agencies of any character. At the same time it is believed that motor transportation now enjoys certain advantages which in effect are prejudicial to the railroads. The Interstate Commerce Commission has been conducting an investigation concerning this matter and we understand it has in mind proposing to Congress legislation deemed necessary in this connection. The railroads will be pleased to work with you in developing desirable and fair federal and state legislation covering highway transportation competitive with the railroads. Such joint effort would, of course, include full consideration of Examiner Flynn's entire report.

As to freight forwarding companies, this matter is also as we understand, under investigation by the Interstate Commerce Commission, and we question the wisdom of our attempting to reach any conclusion in that connection at this time, based, as it would be, upon insufficient knowledge of the situation. We do not think that the interests of the railroads and its employees concerning this matter are or should be at variance.

Concerning provision for employment of furloughed railroad employees which you refer to, we understand that it is your desire that furloughed railroad employees be given opportunity for employment by motor companies and forwarding agencies when controlled by railroads. We think this request has merit and we will recommend to the railroad executives concerned that consistent with the requirements of the service preference be given to furloughed railroad employees when additional men are required.

(c)—Protection of all interests in railroad consolidation.

Reply: You will recall that this matter was very fully discussed at our conference, but owing to the conflicting viewpoints concerning certain phases of the subject as presented by you, and having in mind also that the subject is one concerning which railway executives are not in complete accord, we think it would be difficult if not impossible for us to reach any joint conclusion concerning the matter at this time.

(d)—Federal legislation to provide retirement insurance and elective workmen's compensation.

Reply: Retirement insurance and elective workmen's compensation are to be studied by a joint committee from several of the railroads and your organization, which will report its findings promptly. This joint committee will also consider the other subject to which you called attention, viz:

a dismissal wage. In the absence of the result of this study, we hesitate to express ourselves as to the desirability of legislation on these subjects.

(e)—Establishment of an emergency employment bureau to prepare the way for the eventual establishment of a national placement bureau and to provide means for placing unemployed rail workers as additional opportunities of employment may develop.

Reply: We are willing to establish regional employment bureaus and suggest that they be placed under the direction of Messrs. McClees at New York, Higgins at Chicago, and Neill at Washington. You may desire to appoint a committee to confer with our three representatives as to details.

(f)—Coordination of train crews and train lengths on the basis of economical, safe operation—including any desirable state or federal legislation.

Reply: With you we believe that train lengths and train crews should be coordinated on the basis of economical and safe operation, but unfortunately it has not been easy to agree as to what is safe and what is economical operation. The two terms are relative rather than absolute. It is our conclusion that probably we would be unable to agree concerning this matter and consequently we doubt the wisdom of recommending to the railroad executives at this time joint effort in this connection as you suggest. The question is one which we think can best be dealt with by the employees and managers of the individual companies.

Item 4

In order to carry forward the foregoing program, a continuing cooperation between railroad managements and railroad employees is essential. This will require complete willingness and good faith of railroad managements in dealing with the self-chosen representatives of railroad labor, and whole-hearted compliance with the spirit and the letter of the Railroad Labor Act.

Reply: You suggest that a continuing cooperation between railroad managements and railroad employees is essential. We express unqualified approval of whole-hearted cooperation between management and employees and we will be glad to do everything we can in support of such a policy.

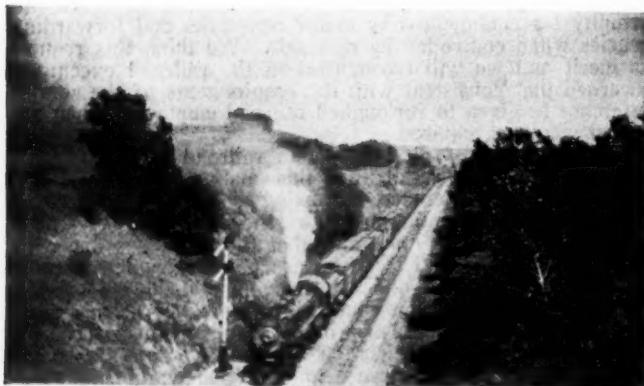
Pay-Roll Reserves

There should also be worked out a provision for payroll reserves to take care of exceptional periods of reduced traffic—which would provide a workable and economical substitute for unemployment insurance. The stabilization of employment should operate to reduce this liability to a minimum.

These reserves should be created by an appropriation of surplus up to the amount estimated as necessary to maintain earnings of employees during periods of depression. In such periods hours of service could be reduced without reduction of earnings, with payment of added cost of employing same number of men for less traffic to be borne out of employment reserves. Thereby there would be no payments for idleness but increased payments for units of work—maintaining the total purchasing power with resulting public benefit.

Reply: We favor, in principle, the policy of creating reserves, when earnings are good, to be available during periods of business depression. The use of such reserves, in our opinion, should not be restricted to any one purpose. It is unfortunate that existing conditions, with which you are familiar, make it impossible to set up reserves at this time.

* * *



Union Pacific Freight Train Westbound Out of Omaha, Neb.

Electric Rolling Stock and Substations

Five papers concerning electric traction were presented at the mid-winter meeting of the American Institute of Electrical Engineers held in New York, January 25-29, 1932. These included "Engineering Features of Three-Power Locomotives" by F. H. Brehob, and F. H. Craton, General Electric Company; "Motors For 3000-Volt, D. C. Multiple-Unit Cars" by J. C. Aydelott, General Electric Company; "The Temperature Rise of Ventilated Railway Motor Armatures" by D. A. Lightband, Westinghouse Electric & Manufacturing Company; "High Capacity Rectifier Efficiency Improved By Sectionalization" by A. L. Atherton, Westinghouse Electric & Manufacturing Company. Items in these papers of particular interest to railroad men may be summarized as follows:

Three-Power Locomotives

Three-power locomotives which can obtain power from a storage battery on the locomotive operating with or without a Diesel-engine-driven generator or from an external contact system. The operation of the first of these locomotives on the west side lines of the New York Central showed that the average power requirement from the engine and battery for the three-shift service was 447 kw. hr., which represents an average load of about 56 kw. or 75 hp. Momentary loads as high as 800 kw. (1073 hp.) occur frequently.

The three-power locomotive has a field of its own and is not intended to supplant the straight oil- or gas-electric unit generally. It is adaptable to heavy switching and short heavy transfer work on internal power, or a combination of both, together with external power operation and is best suited for service on sections of track which, for economic or practical reasons, can not be electrified completely.

Motors for 3000-Volt, D. C., M. U. Cars

Traction motors for the Delaware, Lackawanna & Western are the first installation of 3000-volt direct current motors for multiple-unit cars. There are 564 motors in service. During the first 4,500,000 miles operated by the 141 motor cars, there was one failure of 19 minutes and one of four minutes chargeable to motor failure. The almost complete absence of hot bearings during the initial stage of the electrification is credited not only to design but also to the fact that all of the linings were line reamed after assembly in their respective final positions and to the careful packing of bearings, oiling and breaking-in. Constant oil-level bearings are used. Credit is given to the use of inductive shunts for reducing flashovers at high speed. Motor flashing is also reduced by taking ventilating air from inlets over the vestibules. When the motors were first put into service there was some brush breakage at high speeds, but in a short time the commutators seasoned and brush breaking is now practically eliminated.

Temperature Rise of Motor Armatures

Railway traction motors are usually worked much closer to the limits allowed by existing insulation materials than are machines used in other applications. Furthermore, there is a demand for motors with increased horsepower to be applied within exacting space limitations. These circumstances necessitate an accu-

(Continued on page 216)

French Road Increases Pacific Type Capacity

Incorporation of Thermic syphon feedwater heater, more superheat, larger steam passages and Lentz valves adds 50 per cent to power output of Orleans locomotives built in 1912



Courtesy *Revue Generale des Chemins de Fer*

Compound Locomotive Rebuilt by the Orleans Company

AS the result of alterations in the construction of a compound Pacific type passenger locomotive of a class built between 1912 and 1914, affecting both the distribution of the heating surfaces and the steam distribution in the cylinders, the Orleans Company, France, has effected an increase in power output of 50 per cent and reductions in water and coal consumption ranging from 12.6 to 19.1 per cent and from 10.35 to 18.71 per cent, respectively.

In an article in the July, 1931, issue of the *Revue Generale des Chemins de Fer*, Andre Chapelon, division inspector for the Orleans Company, reviews the history of the development of the 4-6-2 type compound locomotive for passenger service which has taken place on this road since the type was first used on the Paris-Orleans in 1909. The article describes in detail the changes which were made in locomotive No. 3566 as the culmination of this development and sets forth the results of an extensive series of dynamometer-car tests of the rebuilt locomotive, with a complete analysis of the part played by each alteration in the general results. The following summary of these alterations and of the road test results is taken from M. Chapelon's article.

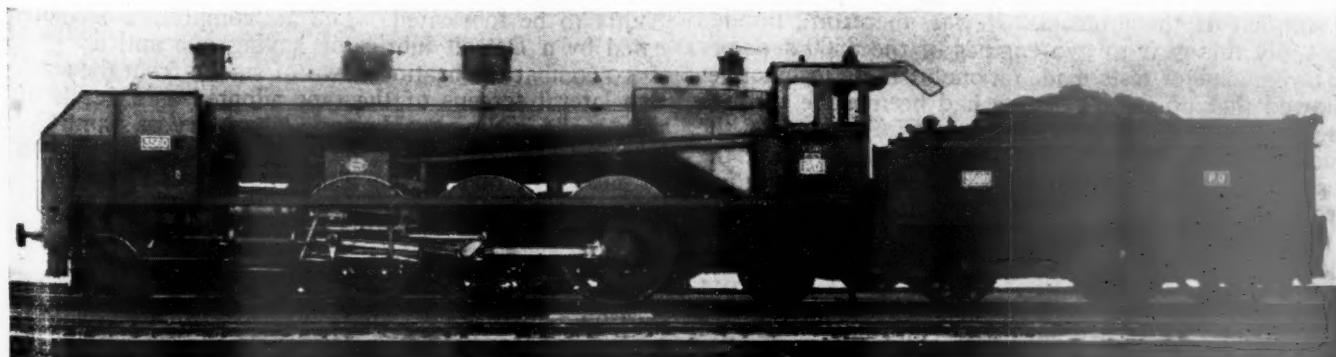
The evolution in the design of the compound Pacific type power on this railroad has been based on the results of several series of dynamometer road tests conducted since 1911. The first of these compared the performance of the first 4-6-2 type locomotives with

that of 4-4-2 and 4-6-0 types of compound locomotives with flat slide valves which were formerly used for express-passenger service. This led to a design of which 39 locomotives, Nos. 3551 to 3589, inclusive, were ordered and delivered during 1912 to 1914, in which slight modifications in the high-pressure cylinders and in the valve motion to effect more regularity of events were incorporated. The diameter of the piston valves was increased from 9.84 to 10.63 in. The maximum section of port opening was increased from 30.64 to 34.9 sq. in. The clearance which also had appeared too small in the first locomotives was increased from 11.5 per cent to 13.2 per cent. Finally, the high-pressure cylinders were provided with a by-pass.

The 4-6-2 type locomotives of these different series rendered good service. They are still hauling many of the heavily loaded trains which are operated at high speeds over the principal divisions of the system.

Rebuilt to Meet New Operating Requirements

Continued increase in tonnage to be hauled at high speeds, however, made it necessary to operate them at maximum capacity, with little margin to meet unforeseen delays. It appeared necessary during the years following the war to improve the performance of these locomotives, especially with a view to enabling them to maintain speeds of 72 to 75 m.p.h., under satisfactory conditions of economy.



Courtesy *Revue Generale des Chemins de Fer*

One of the 4-6-2 Type Compound Locomotives Previous to Rebuilding

A trial of double-admission valves of the Trick type (similar to the Allen valve) applied to the high-pressure cylinders (piston valves) and to the low-pressure cylinders (flat slide valves) was made in 1923 on engine No. 3584. The experiments made on this locomotive showed that the cut-offs both for the high-pressure cylinders and the low-pressure cylinders could be substantially reduced with these valves without the tractive force being diminished. On the contrary, the maximum power of the engine remained substantially the same. The maximum speed attained was practically the same as that of the original locomotives of similar design.

The good effects produced through reduced throttling at the admission, due to the double-admission ports of the valves, were lost at heavy admissions and at high speeds through the exhaust back pressures which re-

Comparison of the Dimensions and Weights of the Orleans Rebuilt 4-6-2 Type Compound Locomotive

	Original locomotive	Rebuilt locomotive
Railroad	Orleans	Company
Builder	Societe Alsacienne de Constructions Mecaniques	
Built	1912	1929 (Co. shops)
Rebuilt		3566
Road numbers	3551-3589	
Type of locomotive		4-6-2
Service		Experimental
Max. rated tractive force, estimated	35,650 lb.	38,770 lb.
Cyl. hp. at 62 1/4 m.p.h., test	1,923 hp.	2,710 hp.
Cylinders, diameter and stroke	1/2 H.P.—16.5 in. by 25.6 in.	
Valve gear, type	1/2 L.P.—25.2 in. by 25.6 in.	
Walschaert	Lentz horizontal valves, Walschaert motion	
Weights in working order:		
On drivers	116,800 lb.	125,662 lb.
On front truck	51,200 lb.	55,335 lb.
On trailing truck	36,750 lb.	37,800 lb.
Total engine	204,750 lb.	218,797 lb.
Wheel bases:		
Driving	13 ft. 1 1/2 in.	
Total engine	34 ft. 1 1/2 in.	
Wheels, diameter outside tires:		
Driving	76 3/4 in.	
Front truck	37 3/4 in.	
Trailing truck	45 1/4 in.	
Boiler:		
Type	Straight top	
Steam pressure	227.57 lb.	
Fuel, kind	Soft coal (Briquettes)	
Diameter, first ring, inside	64 1/4 in.	
Firebox, length	110 1/2 in.	
Firebox, width, front	39 in.	
Firebox, width, rear	71 1/4 in.	
Tubes, number and diameter	151—2 in.	80—2 in.
Flues, number and diameter	24—5 in.	40—5 in.
Length over tube flue sheets	19 ft. 4 1/2 in.	
Grate area	45.96 sq. ft.	
Heating surfaces:		
Firebox and arch tubes	165.45 sq. ft.	164.1 sq. ft.
Thermic siphon		26.5 sq. ft.
Tubes and flues	2,163.3 sq. ft.	1,787.64 sq. ft.
Total evaporative	2,328.75 sq. ft.	1,978.24 sq. ft.
Superheating	678.69 sq. ft.	784.18 sq. ft.
Combined evaporative and superheat	3,007.44 sq. ft.	2,762.42 sq. ft.

mained equal, with the same expenditure of steam, to what they were with the valves previously employed.

In 1925 the results obtained in Austria with the Lentz valve motion with horizontal valves appeared to furnish a solution of the problem. It was, therefore, decided to apply this gear to two engines of the 3500 series.

Dynamometer tests made on one of these locomotives showed that no improvements had been made through the substitution of the Lentz valves. A study of the question, which was undertaken without awaiting the results of these tests, led to the conclusion that any improvement in the performance of the No. 3500 series could not be fully obtained except by changing the valve motion and the steam passages at the same time.

An examination of indicator diagrams taken in 1911 on engine No. 3545 showed considerable loss as the steam passed from the boiler to the high-pressure cylinders, thence to the low-pressure cylinders, and to the atmosphere. The different studies of the problem made

it apparent that, to obtain maximum performance from the compound engines, it was necessary to conform strictly to the following conditions: (1) To provide compound engines with steam passages allowing only minimum loss from the boiler through the high and low-pressure cylinders to the atmosphere, the passages to consist of pipes of large diameter and arranged as directly as possible; (2) to provide compound locomotives with large admission ports and clearances sufficient to avoid throttling and exaggerated compressions in the cylinders; (3) to provide large steam chests to avoid heavy fluctuations of pressure which are produced when the volume is insufficient; (4) to preserve the independence of the high-pressure and the low-pressure valve motions to obtain, for each condition of running, the best combination of the two.

Modifications Made in the Rebuilt Locomotive No. 3566

Locomotive No. 3566 was originally built in 1912 by the Alsace Mechanical Construction Company, Belfort, Alsace. It was rebuilt in 1929 in the shops of the railroad and was returned to service in November of that year.

The principal modifications made to this locomotive can be summarized as follows:

1—Replacing various pipes and devices forming part of the steam passages and securing a substantial increase in the size of the passages.

2—Replacement of the valve motions; namely, the piston valves for the high-pressure cylinders, and the flat slide valves for the low-pressure cylinders, by double-seating Lentz valves, controlled by oscillating cam shafts and Walschaert motion.

3—Replacement of the Schmidt superheater of 24 elements with a Robinson superheater with 32 elements.

4—The addition of a Nicholson Thermic siphon in the center of the firebox to increase the evaporative performance of the boiler. Arch tubes are used at either side.

5—Replacement of the variable exhaust nozzles with a double Kylchap exhaust of a fixed type. This nozzle arrangement required two stacks placed in parallel, one behind the other.

6—The application of an A.C.F.I. integral type feedwater heater manufactured by L'Auxiliare des Chemins de Fer et de l'Industrie, Paris.

A number of complementary modifications became necessary through the novel operating conditions imposed on the locomotive, such as a crank axle with balanced cranks and mechanical lubrication of the driving boxes. The temperature adopted for the superheater made it necessary to devise a special system of lubrication for the cylinders. Thus, the condensation lubricator ordinarily used was replaced by a mechanical lubricator. The cylinders, valve-motion parts and cam-shaft bearings are lubricated by a Bosch type mechanical lubricator having 20 outlets. This lubricator is located in the cab and is actuated by a drive connected to that of a recording speedometer. Relief valves of Woerner design are placed at the junction points of the lubricating oil pipes and as near as possible to the points to be lubricated. The air compressor is lubricated by a Detroit lubricator having one outlet.

To combat the beating down of smoke from the stack two lateral screens of the type adopted as a result of tests made in the aero-dynamic laboratory of Saint Cyr have been placed in front on each side of the smokebox as shown in one of the illustrations.

Road Tests with the Rebuilt Locomotive

Two series of road tests were conducted with locomotive No. 3566. The first series was to make a comparison between the rebuilt locomotive and the best high-speed locomotives in service on the system and to investigate the limit of the power of locomotive No. 3566, by having it haul suitably overloaded trains. The

second was to make a study of the performance of the rebuilt engine and included the taking of indicator diagrams on the cylinders.

Thirty-four tests were run on regular trains between St. Pierre-des-Corps and Angouleme, 133 miles; six special trains were tested between St. Pierre-des-Corps and Bordeaux-St. Jean, 216½ miles, and two special trains between Les Aubrais and Bordeaux-St. Jean, 285½ miles. The profile of these sections of line includes grades up to 0.5 per cent.

For the tests in regular service, south and north runs were selected, scheduled, respectively, for nominal speeds of 59 and 46½ m.p.h. The corresponding tonnages were about 364 and 547 tons, which correspond-

Fuel and Water Consumption of Locomotive No. 3566

Figures are from results of selected dynamometer-car tests

Water consumption, lb. per hp.-hr.	Coal consumption, lb. per hp.-hr.
In cylinders	At tender drawbar
Tests between St. Pierre-des-Corps and Angouleme—133 miles	
13.8	24.2
13.8	20.7
13.8	25.0
13.8	20.7
13.0	25.0
13.8	21.6
12.1	23.4
12.1	19.0
Tests between St. Pierre-des-Corps and Bordeaux-St. Jean—216.24 miles	
11.2	19.8
12.1	19.0
12.1	18.1

ed substantially to the maximum loads provided for the 4-6-2 type locomotives of standard design. Six trains on each of these runs hauled by locomotive No. 3566 had the nominal speed increased, respectively, from 59 to 68½ m.p.h. and from 46½ to 56 m.p.h. Likewise two trains on each run with this accelerated speed had their tonnages increased, respectively, from approximately 364 to 552 tons and from 547 to 643 tons.

Relative to the locomotives with which No. 3566 was compared, the data were as follows: Six trains in each direction were hauled by a standard 4-6-2 type locomotive, series No. 3551 and 3589, equipped with a Houlet superheater and a Kylchap exhaust. Four trains in each direction were hauled by a standard 4-6-2 type locomotive, series No. 3641 to 3670, equipped with a Schmidt superheater and an exhaust having three Goodfellow projections. Locomotives of this series differ only in a few details from the series No. 3551 to 3589.

Two southbound and three northbound trains were provided with a second locomotive of the No. 3551 series, of which the two southbound trains had had their nominal speed increased from 59 to 68½ m.p.h. and one northbound train from 46½ to 56 m.p.h. Two trains in each direction were hauled by a 4-6-2 type single-expansion locomotive, series No. 3591 to 3640, equipped with a Schmidt superheater and Kylchap exhaust. One of these trains in each direction was run at the increased nominal speed. It was not possible to make the same number of test runs with these last two locomotive assignments because of a failure of the low-pressure slide valves of the compound locomotive and the vibration of the cylinders of the single-expansion engine on the higher speed schedules.

The special trains hauled by engine No. 3566 had tonnages estimated from 349 to 592 tons and nominal speeds of 62, 65½ and 68½ m.p.h.

To eliminate errors which might result from the use of different steam-chest pressures, according to the composition of trains and habits of engine crews, all

the tests were made with wide-open throttle. The regulation of the power developed by the locomotive was made by means of the brakes. To further eliminate the personal equation the locomotives compared were handled by the same engine crew.

The fuel used had a heating value of about 14,000 B.t.u.

Tonnage at Increased Sustained Speeds

The alterations made on locomotive No. 3566 made it possible to substantially increase the load and the speed of the trains previously hauled by the 4-6-2 type locomotives. It was possible on one test to increase the load from 349 tons to 558 tons, while the nominal speed was increased from 59 to 68½ m.p.h. This is as compared with what is done with ordinary 4-6-2 type locomotives, a load increase of 209 tons and a gain in time of 20 min. on the stretch of 133 miles from St. Pierre-des-Corps to Angouleme.

With another train it was possible to haul 642 at a nominal speed of 56 m.p.h. This is a tonnage gain of 64.2 tons and a gain in time of 35 min., compared to the maximum made with the locomotives in regular service.

Finally, the low water consumption of the locomotive made it possible to cover, without stopping, the distance from St. Pierre-des-Corps to Angouleme with a tender tank of 5,820 gal. and a load of 357 tons, at a nominal speed of 68½ m.p.h. With a tender of 9,800 gal. the distance from St. Pierre-des-Corps to Bordeaux-St. Jean, 216½ miles, with a load of 444 tons, was covered at a nominal speed of 68½ m.p.h. and also with a load of 494 tons at an average speed of 62 m.p.h. when the train was steam heated at a pressure of 85½ lb. per sq. in.

The results obtained in the course of these tests justified the expectation that it is possible to haul trains

Comparison of the Maximum Horsepower Developed at the Tender Drawbar and in the Cylinders

Date	Tons hauled	Distance, ft.	Running time, min.-sec.	Average speed, m.p.h.	Average force at tender drawbar, lb.	Dynamometer-car reading, hp.	Cylinder hp.	Avg. hp. exerted	Remarks	
									Locomotive No. 3579 — Tests run between Paris and St. Pierre-des-Corps	Locomotive No. 3566 — Tests run between St. Pierre-des-Corps and Angouleme
12-16-26	497	42,652	7-0	62.14	8,333	1,380	2,075			
12-16-26	497	55,775	10-6	62.76	7,390	1,238	1,923			
12-21-26	414	52,494	9-36	62.14	5,717	1,164	1,954			
12-21-26	414	72,180	11-11	73.32	4,850	948	1,738			
4- 4-30	406	9,843	1-31	73.82	8,951	1,762	3,030			
4- 5-30	650	39,371	8-12	54.56	11,905	1,737	2,465			
4- 8-30	625	14,764	3-5	49.10	13,779	1,805	2,545			
4- 8-30	625	26,247	4-24½	67.73	9,832	1,775	2,762			
4- 8-30	625	78,742	12-20	72.70	7,804	1,515	2,465			
4- 8-30	625	49,214	7-54½	70.71	8,653	1,632	2,663			
4- 8-30	625	21,326	3-52	62.76	10,858	1,810	2,710			
4-10-30	620	28,052	4-33	70.21	9,921	1,860	2,915			
4-11-30	724	55,775	11-32	54.93	12,125	1,778	2,140			
4-11-30	724	49,869	9-8	61.21	10,692	1,752	2,265			

with a load of 444 tons at an average speed of 68½ m.p.h. from Aubrais to Bordeaux, 286 miles, with one stop for water at Poitiers.

Contrary to the 4-6-2 type locomotives in regular service, both compound and single-expansion, locomotive No. 3566 could maintain, without difficulty and as long as desired, speeds of around 74½ m.p.h.

Boiler Performance

In spite of the presence of a superheater of large dimensions, a circumstance that is little favorable to the good thermal output of the boiler, and an inferior co-

efficient of heat transmission between the combustion gases and the steam, the boiler of locomotive No. 3566, provided with a Thermic siphon and double exhaust, has proved to possess a mean thermal output that is substantially equal to that of the boilers of the locomotives with which it was compared.

The thermal efficiency of the boiler of locomotive No. 3566 being substantially equal to that of the locomotives under consideration for the same rate of hourly combustion, it was found that with equal power developed the effective thermal output obtained with the boiler of this locomotive became greater than that of the other locomotives as soon as considerable power was produced. This efficiency is more constant for the rebuilt engine than for the ordinary locomotives. This result, which confers on the boiler of locomotive No. 3566 considerable elasticity with respect to steam generation, can be ascribed to the Thermic siphon, because of the more active circulation of water which gives to the heating surfaces the ability to absorb quantities of heat which remain substantially proportionate to the coefficient of the load on these surfaces.

This result must also be ascribed to the effect produced by the double exhaust which forces into the firebox a quantity of air that is always well proportioned to the process of the combustion especially at peak loads on the boiler.

The temperatures vary from 662 to 752 deg. F. according to the demands on the locomotive. At the same time the superheating temperatures obtained when the feedwater is preheated are lower than those which are obtained when the feeding is done by an ordinary injector.

Reduced Fuel and Water Consumption

The consumption figures obtained with locomotive No. 3566 are small, varying from 1.6 lb. to 1.9 lb. of coal per indicated horsepower-hour, and from 11.5 to 13.94 lb. of water. The corresponding consumptions of fuel and water per horsepower-hour developed at the drawbar varied from 2.21 to 3.3 lb. and from 17.78 to 24.62 lb. gal.

The savings made by locomotive No. 3566 over the standard compound locomotive fell between 12.6 per cent for water and 10.35 per cent for coal, as the lower limit, and 19.10 per cent water and 18.71 per cent coal, as the upper limit, according to the tractive force demanded of the engine. The boiler was fed by a standard injector. With the feedwater pump these savings increased to 21.21 per cent water and 16.86 per cent coal on a test run scheduled at 59 m.p.h. and to 25.35 per cent water and 25.80 per cent coal for a train scheduled at an average speed of 56 m.p.h.

It is important to note that on the standard 4-6-2 type compound and the single-expansion locomotives increasing the speed with no increase in load brought with it a remarkable increase in the consumption of water and fuel. On locomotive No. 3566, however, the consumptions remained substantially independent of the tractive force demanded, even when running at accelerated speeds.

Summary of Results of Tests

Summarizing the modifications made to the locomotive No. 3566 produced important improvements. They had for effect (1) an increase in available tractive force at the drawbar of about 50 per cent; (2) less consumption of water and fuel—(a) at lower power output about 10 per cent when the boiler is fed by the injector and about 15 per cent when fed with the A.C.F.I. integral pump, and (b) at larger power output about 20

per cent when the boiler is fed by injector and 25 per cent when fed by pump; (3) to increase the practical speed limit to at least 74½ m.p.h.; (4) to produce satisfactory performance and life of mechanical parts even when the maximum tractive force is developed at high speeds for long periods of time.

In view of these results the Orleans Company is rebuilding twenty 4-6-2 type locomotives according to the design developed with locomotive No. 3566. These are locomotives Nos. 3501 to 3520, inclusive, using saturated steam. They were constructed in 1909.

The new power will differ from locomotive No. 3566 by raising the safety valves from 228 to 242 lb. per sq. in. and by replacing the 32-element Robinson superheater with a 28-element Houlet superheater. This will make it possible to increase at the same time the thermal efficiency of the boiler and the passage areas for the gases through the superheater flues. This increase of the passage section for the gases will also make it possible to increase the size of the exhaust pipe and to further diminish the back-pressure on the pistons.

The diameter of the low-pressure admission valves will be increased from 8.66 to 9.45 in., thus profiting to a greater extent from the use of early cut-offs in the low-pressure cylinders.

As a result of these tests with locomotive No. 3566, the Orleans Company is rebuilding twenty of its 4-6-2 type compound locomotives which were originally built in 1909 by the Societe Alsacienne de Constructions Mechaniques for express-passenger service. The rebuilt power is scheduled for delivery in 1932.

G. N. Safe Without Automatic Train Control

THE decision of the Interstate Commerce Commission authorizing the Great Northern to discontinue the operation of automatic train control on 229 miles of line which have been thus operated for about five years, under the orders of the commission, was noticed briefly in the *Railway Age* of January 23, page 186.

The decision, which was given by Commissioner McManamy, says that in view of the low traffic density, the favorable physical characteristics of the road and terrain, the relatively moderate rates of speed, the record of safety, and the freedom from accidents of the character which this device is designed to prevent, "we find that at the present time operating conditions on these divisions do not require the maintenance and operation of automatic train-stop devices and that therefore our orders * * * are suspended until our further order."

The full report shows that the Great Northern has operated the whole of its 8,371 miles of road for 12 years with no fatal injury to any passenger by a collision; and in the five years ending with 1930, there were killed in collisions only four persons, and injured only 77. The four killed were employees and three of the four cases were in yards (not on main track). The train mileage on the system in 1930 was about five per cent less than in 1925 and passenger earnings, as on most railroads, fell off seriously. The traffic totals (which are given for the whole road) are said to represent fairly the conditions on this particular section.

Locomotive enginemen operating in train-stop territory say that the company's money would better be

spent to introduce automatic (visual road side) block signals on the 111 miles between Devils Lake and Surrey, these enginemen being familiar with conditions on all of the sections under consideration. The engineers had never known of any case where a collision was averted by the automatic train control system.

The extremely light traffic density in this territory, which has decreased since the commission's orders, is shown, for 1930, in the diagram, the figures for freight trains being averages per day; first, during October, which is the busy season and, secondly, in June which represents approximately the volume of traffic in the eight months of the year when business usually is lighter.

The line extends over parts of two divisions; from New Rockford, N. D., to Minot, 109 miles west, and thence to Williston, 120 miles farther. On the line east of Minot, the installation was made July 18, 1926, and on that west of Minot on November 1, 1925.

Average Volume of Traffic, 1930

New Rockford 0

NEW ROCKFORD AND MINOT

1 Pass., 1 fast mail each way, 1 mixed. Additional, between Surrey and Minot, 1 pass., 1 mixed.

Freight; October, average: Westbound 5.6; Eastbound 5.8. June, Westbound 2.9; Eastbound 2.6.

Surrey 102

MINOT AND WILLISTON

2 Pass., 1 fast mail, each way. 1 mixed, only 22 miles. Freight; October average: Westbound 6.4; Eastbound 6.2. June, Westbound 2.7; Eastbound 2.4. Additional between Minot and Berthold, 15 turn-around runs.

Williston 229

General Manager F. J. Gavin, testified that there is no part of the Great Northern on which automatic train control is required; that the company has received no benefit from this installation and that the apparatus could be removed without sacrificing any safety features.

The cost of maintaining and operating the system for three years ending December 31, 1930, was \$54,519; and in addition there is a loss because in lengthening the runs of locomotives, certain engines otherwise useful cannot be run over this section without infraction of the order.

The report in its summary of reasons reviews the statement of principles which was set forth by the commission when it made its general report on automatic train control (148 I. C. C. 188) calling attention to the fact that accidents which are preventable by automatic train control are relatively few, in comparison with the railroad accident record as a whole. It states that the Great Northern has more than 6,000 miles of track not yet equipped with automatic block signals;

and 5,874 grade crossings not yet protected, except by signs. The cost of equipping a grade crossing with an automatic signal is about \$1,500. The road strongly contends that it should not be required to provide super-protection on this short district, less than three per cent of the railroad, while more than 72 per cent remains without block signals. The commission is on record as requiring generous expenditures for the protection of human life, with the money so distributed as to provide the greatest possible measure of protection; and therefore the decision, in favor of the Great Northern, is as quoted above.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended January 16 amounted to 573,276 cars, an increase of 772 cars as compared with the preceding week, but a decrease of 151,936 cars as compared with the corresponding week of last year. As compared with 1930 it was a decrease of 273,879 cars. Increases as compared with the week before were shown in grain, forest products, merchandise, and miscellaneous freight, but other commodity classifications showed reductions. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

	Week Ended Saturday, January 16, 1932	1931	1930
Districts			
Eastern	128,945	162,820	194,849
Allegheny	113,256	146,263	171,318
Pocahontas	37,010	45,781	57,111
Southern	88,094	110,613	135,635
Northwestern	64,567	88,625	100,631
Central Western	90,569	114,423	119,003
Southwestern	50,835	56,687	68,608
Total Western Districts	205,971	259,735	288,242
Total All Roads	573,276	725,212	847,155
Commodities			
Grain and Grain Products	31,004	41,138	37,500
Live Stock	21,443	27,226	26,838
Coal	119,121	167,145	190,882
Coke	5,692	8,942	11,194
Forest Products	18,091	32,284	46,990
Ore	2,317	4,916	8,052
Mdse. L.C.L.	186,627	206,486	232,072
Miscellaneous	188,711	237,075	293,627
January 16	573,276	725,212	847,155
January 9	572,504	713,128	862,461
January 2	502,325	614,860	775,755
December 26	441,589	536,292
December 19	581,733	713,865
Cumulative total, 2 weeks	1,145,780	1,438,340	1,509,616

Car Loading in Canada

Car loadings for the week ended January 16 amounted to 39,778 cars, an increase of 994 cars over the previous week but a decrease of 4,185 cars over the second week last year.

Although merchandise loading was lighter than in the second week of last year by 1,110 cars, the index number showed an increase over the last weeks of 1931, rising from 87.8, 89.9 and 84.1 for the last three weeks in 1931 to 107.2 and 91.8 for the first two weeks in 1932. The absence of a holiday in the week ended January 9, affected the index number for that week, but the rise in the second is apparently a real improvement in the relative loading of l.c.l. freight.

Total for Canada	Total Cars Loaded	Total Cars Rec'd from Connections
January 16, 1932	39,778	20,104
January 9, 1932	38,784	19,481
January 2, 1932	30,679	16,990
January 10, 1931	43,963	24,758
Cumulative Totals for Canada		
January 16, 1932	78,562	39,585
January 10, 1931	80,312	46,541
January 11, 1930	96,419	63,858

Banker Criticizes

I. C. C. and Managements

THE Interstate Commerce Commission and railroad managements, particularly the former, were taken severely to task by Philip J. Roosevelt, of Roosevelt & Son, bankers of New York, in an address on January 26 before the New England section of the Railroad and Utilities Security Owners Association at Boston, Mass. Mr. Roosevelt cited the great decline in railroad earnings and their failure to earn an adequate return even in times of prosperity, in spite of the plain mandate from Congress directing the Commission to prescribe rates "reasonably certain of establishing credit for the carriers."

"But there can be no question," he added, "that managements—railroad executives—must share with the Interstate Commerce Commission the blame for the breakdown of this phase of the Act." In this connection he mentioned the failure of managements to initiate increases in rates on packing house products in Western trunk line territory and the "slashing" of rates on non-ferrous metals in this same territory. He declared further that "railroad executives were brought up in the school of 'get the traffic, never mind the rate' and they have continued to operate on this basis. . . . Whatever the decision of the Commission might otherwise have been [in the 15 per cent case], there was no alternative that I can see left to the Commission but to deny the carrier's application when certain of the railroad executives—executives of then strong carriers—through the back door whispered to members of the Commission that a 15 per cent general freight rate increase was unnecessary and economically unsound and that it was unfair to make every shipper pay higher rates so as to save the chestnuts of other less fortunate carriers."

He added, however, that railroad managements, during the past few months, were showing improvement in developing a spirit of co-operation. Railroad bonds, he said, were inherently strong when judged by the standards ordinarily used in measuring investment strength, i.e., the total investment securing them and the potential earning power based upon the intrinsic worth of the service rendered by the industry. The fundamental difficulty, he said, was that responsibility and authority have been divorced.

"I believe," he continued, "if the present law, the Transportation Act of 1920, could be made to function as I believe it was intended to function by its authors that we would once again have reason for faith in the business future of railroading. But the trouble with that Act is that it leaves the investors powerless to take any steps toward its enforcement. I don't believe the members of the I.C.C. are earning their pay because I believe that one thing they are paid to do is to enforce Section 15a of the Transportation Act. . . .

"Under the present law our hands are tied. Just in the same way as Robin Hood held up and robbed travelers through the good green wood for the quixotic redistribution of wealth in the best interest of all concerned as he saw it so we are being held up and robbed by the Interstate Commerce Commission—which incidentally has sworn to protect us,—so that shippers of many commodities may enjoy the subsidy of shipment at rates below rates which would be fair and which would yield a fair revenue. Direct taxes on railroads went up from \$100,000,000 in 1911 to \$400,000,000 in 1929. That is bad enough but in addition we are now subsidizing

agriculture in particular because it is a depressed industry and we are subsidizing all our other shippers taken as a whole, too, because the Interstate Commerce Commission doesn't see fit to read section 15a the way it was written. . . .

"There is also the complaint that railroad managements are much more interested in out-maneuvering their competitors and pleasing their shippers and their communities than they are in earning money for their security holders. This is a fact emphasized by the trifling security holdings in their own systems held by all but rare and exceptional railroad executives and is a sorry contrast to practice in the public utility field. The slashing of dividends, defaults and threatened defaults has been a matter largely of academic concern to the country's leading railroad executives. The investment wisdom of these gentlemen cannot be denied in the light of present stock and bond prices but their own actions are more creditable to their heads than to their hearts. . . .

"I propose that investors consider legislation under which the Commission would be directed within six months to promulgate a final plan for the consolidation of the railroads into a limited number of systems. Railroad bonds which are outstanding at less than a reasonable appraised valuation of the property should be assumed by the United States, and railroad stockholders could elect to accept either what the courts eventually held to be the 'reasonable valuation' of their stock or else to accept such number of shares in the new system into which their property was about to be consolidated as the Commission should fix. Naturally it would be in the interest of all concerned if the Commission could convince the carriers' boards of direction that it was advisable for them to recommend to their shareholders the acceptance of shares in the new consolidated systems. . . .

"I propose that the stock should all be trusted with the Interstate Commerce Commission, voting power to lie in its hands so long, and only so long, as the particular system in question earned a 'fair return upon a reasonable valuation.' If the property failed to do so then the voting power would lie in the certificate holders. Naturally as a corollary in order that responsibility and authority should remain in the same hands neither the Commission nor the Labor Board would then have anything more to say about rates, service or wages until the property once again showed a 'fair return on a reasonable valuation.' Half of any profit above a fair return on a reasonable valuation earned through favorable location of the particular property or extraordinarily efficient management I propose should be used for the purchase in the open market and cancellation of outstanding bonds or to buy short term government securities to be held as a liquid reserve.

"The above is the barest outline of a suggestion. Some of its advantages seem to me to be that it would place the railroad business on a business basis by putting responsibility and authority in a single hand where today they are divorced. At the same time it would add nothing to the cost of administration of the I.C.C., in fact that body should be able to act far more directly, and, relieved of its quasi-judicial functions and functioning in a purely administrative capacity, its expenses should be reduced. From the shippers' standpoint, his interest would be protected pari-passu with the interests of the investor. Labor would be protected to the limit of capital's ability to pay,—beyond that, no protection can be afforded to labor for which it will not suffer in the long run. Incompetent management will, of course, oppose such a plan as I suggest. I doubt if competent executives would do so."

N. I. T. L. Asks Flexible Rate Rule

Relief for railroads proposed in retroactive
repeal of recapture clause

WASHINGTON, D. C.

THE Interstate Commerce Commission's recommendations to Congress that the rate-making rule of Section 15a be simplified and made more flexible, the subject of hearings during the past week before the House committee on interstate and foreign commerce, have been attracting new suggestions for added simplicity, as the hearing progresses. If any more simplification schemes are advanced the eloquence of Alfred P. Thom, general counsel of the Association of Railway Executives, will be put to a severe test when his turn comes to discuss the matter, in an effort to see that a fair return is not sacrificed to flexibility. No one so far, however, has suggested any expressions connoting more flexibility than those drafted by the commission.

After having been mentioned in advance by President Hoover in his message to Congress as an important feature of his program for economic relief, the commission's recommendation in its annual report was that Section 15a should be simplified by substituting a "rate base," to be determined by accounting methods, for the valuation of the present law, and by using the rate base, in combination with a flexible percentage, as a "barometer" to guide the commission over a period of years in adjusting the general rate level. This was to relieve the commission from the rigid requirements of a "mathematical formula" while the railroads were to be relieved from liability to recapture of any excess earnings, if not from the probability of earning them. The plan was advanced in a bill, H.R. 7116, introduced by Chairman Rayburn of the committee, but accompanied by another, H.R. 7117, mainly drafted by Commissioner Eastman as chairman of the I. C. C. legislative committee, proposing a still more simple, if no more flexible, rate-making rule including neither rate base nor percentage. As drafted it also contained no recapture, but Mr. Rayburn was not quite willing to let go at once of the sums possibly recapturable for the past. The bills were advanced as alternative substitutes for the law that has been on the statute books for twelve years and on the nerves and possibly the conscience of the commission for several years, although not yet noticeably reflected in the railroad income account.

Which of the two plans President Hoover intended to commend to the consideration of Congress, has not yet been explained. Commissioner Eastman stated that the shorter and simpler of the two bills, H.R. 7117, is now preferred to the rate base plan by all the commissioners except Commissioner McManamy. Long before Commissioner Eastman had finished spending three morning sessions in explaining to the committee how either plan would relieve the commission, and R. C. Fulbright, chairman of the legislative committee of the National Industrial Traffic League, had devoted two more sessions to explaining how the shorter bill would relieve the railroads and incidentally the shippers, half a dozen members of the committee had suggested ways of further simplification that would produce a rate-making rule about as flexible as the commission's administration of 15a.

The first obvious suggestion was contained in queries as to whether all the factors, including the necessity

for railroad credit, specified in H.R. 7117 as to be given due consideration by the commission, were not already included in the definition of a "just and reasonable" rate. Commissioner Eastman thought they were but that it was important and desirable that the need for adequate credit be emphasized in a declaration of legislative policy. Some of the Congressmen professed to fear that specific mention of credit in the law would unduly emphasize that factor, and asked if it could not be omitted, while others suggested omitting all three of the considerations mentioned in the bill, including also the transportation needs of the country, and the shippers' needs for transportation service at the lowest possible rates, leaving only the direction to the commission is to adjust rates, so far as practicable, that the revenues will constitute a sufficient basis for the maintenance of an adequate national transportation system.

Some members of the committee pressed so vigorously the argument that specific reference to the maintenance of adequate credit for the railroads would revive the same contentions for higher rates that railroads and investors have made under the fair return rule of 15a that Commissioner Eastman was impelled to argue for a declaration of legislative policy. He admitted, however, that the language of the bill perhaps included some redundancy and said that if Congress wanted to "boil it down" the commission would probably not object, but he pointed out that the present proposal is "less rigorous" than the rule of 15a and also that it would apply only over a reasonable period of years. He also called attention to the proviso that rates shall not necessarily be raised in times of depression or reduced in times of better than normal earnings.

No one has yet gone so far as to suggest that the "lowest possible lawful rates" standard of the Hoch-Smith resolution would be a sufficiently specific rule of rate-making, but the questions asked by several members of the committee indicated an opinion that any more words would be superfluous. On the other hand, laws are not always written by the committee members that ask the most argumentative questions.

Mr. Fulbright also emphasized the importance of recognizing in the law the necessity for the maintenance of credit, particularly if the cash assurance supposed to have been provided for investors by the language of 15a is to be repealed, and especially under present conditions, although he said he was opposed in general to any form of "Congressional rate-making."

Recapture Estimate Called "Guess-Work"

There was much discussion of the "relief" to railroad credit to result from excusing the roads from the rather nebulous recapture liability hanging over them, estimated by the commission at from \$224,000,000 to \$378,000,000, which it is perfectly willing to trade for some relief for itself from the arduous task of making so many valuations each year and defending them in court, as well as from the restrictions of a direction to produce "as nearly as may be" a fair return. In fact there was so much talk of this that some of the Representatives began to indicate some reluctance to parting with the money, until Mr. Fulbright said that a good part of

it was nothing more than "absolute guess-work" by the commission for the purpose of giving Congress an estimate and that the exact amount has so far been ascertained for only a few railroads.

It was Commissioner Eastman himself, however, who indicated that \$378,000,000 for twelve years is not so much in relation to the total railroad investment, when he remarked that it had seemed to him "singularly stupid" when the railroads "saw a ghost" of government ownership in the proposal of the Howell bill that the government invest the recapture fund in railroad improvements. It is understood that some of those who conjured up that ghost were thinking of the amount of recapturable income that might result from a rate level that would give the railroads as a whole a fair return over a period of years that would amount to nearly \$378,000,000 a year more than their average since 1920. Prospects of any "relief" of that kind, however, are still in the realm of flexibility and it seems to be the theory that competition of other forms of transportation will minimize the importance of recapture for the future. Commissioner Eastman also mentioned the possibilities of consolidation as a means of leveling railroad earnings and said that personally he still thought that something could be accomplished through pooling.

Both Commissioner Eastman and Mr. Fulbright, however, made it plain that they would like to get rid of the recapture clause on its own account as being unfair and impracticable, aside from any virtues it may possess as a trading point to induce the railroads to assent to a flexible rate-making section. So far as the commission is concerned recapture has largely served its purpose by keeping alive the interest of the appropriations committees until it could complete its pre-war valuations.

When one member asked if the considerations in the bill would not afford new statutory grounds for the carriers to contest commission orders in the courts, Commissioner Eastman said that it would be difficult for them to prove that the commission had disregarded the factors to be considered. In reply to another question he said that even if the rate base plan were adopted the commission would not be "tied down to the rate base," but would be required to use it only as a guide.

Representative Garber asked if Congress should not mention all the factors to be taken into consideration in rate-making if it is to mention any. Commissioner Eastman replied that he did not think Congress ought to attempt that; that "it takes a good deal of wisdom to say that 'these are the only factors' to be considered."

Mr. Fulbright, testifying for the National Industrial Traffic League, on January 22, said he had been authorized to state that H.R. 7117, with some slight changes and with the provision for complete retroactive repeal of the recapture provisions, would meet the approval of the shippers, and that "we are really the pioneers of this movement before this committee today." He outlined the history of the league's opposition to Section 15a since 1922, when it proposed a simple flexible rule recognizing the right of the carriers to earn a fair return under normal conditions. He said that for a time it seemed impossible to get a law that did not include some kind of a rate base, but that since 1927 the league has taken a position that "we should get away from the statutory ascertainment of aggregate value" except for keeping a record of additions and betterments to supplement the primary valuation when it is completed.

"If the commission had enforced the letter of the present law" he said, "it would have had to raise rates in times of depression and reduce them in times of prosperity, but, of course, the commission has not done that." He expressed disapproval of H.R. 7116, on the

ground that it is "packed full of litigation and just switches the controversy from valuation to the rate base," including the disputed question as to how much should be deducted for depreciation. Asked whether the league would support the bill in the form it was introduced, repealing recapture only for the future, Mr. Fulbright said that the league has always been opposed to recapture but that he would not say it would fight the bill on that ground and would be very glad to take it as it is.

Questioned as to whether the specification in the bill of certain factors to be taken into consideration would not constitute undue emphasis on those factors, particularly railroad credit, Mr. Fulbright said that he agreed with what Commissioner Eastman had said on that point, and that he was opposed to the promulgation of "hidebound rules" under which the commission must make rates, but that repeal of a law sometimes has a bad effect on the public and that "we believe the law should include some assurance because of what we believe to be the very serious credit situation confronting the carriers at this time. If it were not for that we would like to forget 15a entirely."

Representative Nelson asked what benefits the shippers expected as a result of the bill. After Mr. Fulbright said it would "help the credit of the railroads," help them "to buy goods from us," and protect the shipper from being required to "defend himself against an increase in rates in a time of depression," Mr. Nelson pressed him as to what was regarded as the "greatest" benefit to the shippers. Mr. Fulbright then said: "a flexible system of rate-making that would assure him adequate transportation."

The league believes, Mr. Fulbright said, that Congress should at once repeal the rate-making rule of section 15a and substitute "a simple flexible rule which will protect the shippers from rate increases in times of depression and will enable the carriers to build up a reserve in times of prosperity;" also that Congress should repeal the recapture provisions, making such repeal retroactive, "so as to cancel the existing claims and end the tide of litigation incident thereto. Section 15a has proven a snare to the shippers and a delusion to the carriers," he said. "It is productive of ceaseless litigation and controversy and is not only economically unsound as a principle of rate-making but is wholly impracticable as has been demonstrated by its operation. It has not provided the assurance of a standard return through good times and bad as the carriers expected, but, on the other hand, has restricted their earnings in times of prosperity and paralyzed their credit in times of depression. Its mandate to adjust the rates from time to time so that the carriers may earn as near as may be a standard return, hangs as a serious threat over shippers in depressed times when transportation charges are most burdensome, while, on the other hand, it sets a definite limitation upon the ability of the carriers to build up reserves in times of plenty. The railroad systems should be a sort of balance wheel of prosperity and should be in a position to build up and improve their properties during times of general business depression when there is a surplus of labor and to conserve expenditures during the peak periods of traffic movement when labor is least plentiful, but the effect of this law is to require them to do the opposite."

"We believe that the effects of the business depression, with its necessary loss of traffic to the railroads, combined with the accumulation of numerous huge claims against the railroads on account of operations for previous years, under the unfair operation of the recapture law, today constitute the most critical and

dangerous situation the railroads of the United States have ever confronted. Next to the lack of business incident to the depression the greatest burden upon the railroads today are these accumulated government claims which have operated to frighten the investors of every class away from railroad securities.

"There is no doubt but that the general public today would like to see Congress do something to assist the railroads in their present predicament. We do not believe that this should be done by appropriating treasury funds for the benefit of the railroads, beyond the requirements of ordinary business prudence as may be done in the case of industries generally, nor do we believe that an additional transportation burden should be saddled on the public in the shape of increased freight rates and passenger fares. But here is one thing that Congress can do which will relieve the railroads from hundreds of millions of dollars of claims hanging like a millstone upon their credit today. The cancellation of these claims and the repeal of this recapture law will save the government millions of dollars in appropriations for the Interstate Commerce Commission and will save the railroads many more millions of dollars in costs, fees and expenses of interminable litigation. This saving to the railroads is an indirect saving to the shippers."

Mr. Fulbright cited examples, to show the "grotesque" results of the operation of the recapture clause, of railroads which had little or no return in most years but are on the commission's recapture list for one or two years because of some peculiar and temporary traffic condition, although they are now having difficulty in earning operating expenses and taxes. For example, the New York, Chicago & St. Louis is on the commission's list for about \$15,000,000, he said, although from 1921 to 1931 it has averaged only 4 per cent on its investment and last year earned only 1.05 per cent. None of the major carriers would be in the recapture class if it were figured on a ten-year average, he said. One important class of roads in the recapture list, Mr. Fulbright said, consists of terminal railways, against which there are claims amounting to \$40,000,000, although the railroads which own them may not have had a fair return. Mr. Fulbright said so much about the recapture "claims" that members of the committee wanted to know when the claims were made. He said the commission had not yet "shouted them to the world" because they are still too indefinite.

Representative Mapes remarked that after all the recapture is only a part of Section 15a and that it seemed to him that the important question was whether the bill gives the commission as much instruction and light as possible as to how rates shall be made. Representative Huddleston then asked if the old rule that rates shall be "just and reasonable" was not sufficient. Mr. Fulbright said that if Congress simply repealed Section 15a now the public might think Congress had abandoned the railroads and that "you can't get away from public psychology." "Then is it your idea that we should pretend to do something that is not necessary in order to appeal to an unintelligent public psychology?" asked Mr. Huddleston. Mr. Fulbright replied that that is often necessary.

Mr. Fulbright said the general level of rates under which the recapture had accumulated was on the whole considered just and reasonable. Later he said that probably in 1927 the rates could have been increased generally except on agricultural and some other products but that in that case they should have gone down in 1931. By way of amendment of the bill he suggested an additional clause directing the commission to consider "the

maintenance of rates and charges under which a free movement of commerce may be fostered and preserved" and in place of language suggested by the commission a declaration that it is the duty of the commission, "in the exercise of its sound discretion, to so adjust the general level of rates from time to time as to produce, as nearly as may be, over a reasonable period of years, revenues consistent with the standard herein set forth: Provided, that nothing herein shall be construed to require the commission to increase the level of rates in times of economic depression or to decrease the same during times of economic prosperity."

Mr. Fulbright said he thought the weak road problem had been exaggerated but that it is being solved to a considerable extent by consolidations. He said it would be a mistake to try to put all roads on an equality, as that would destroy initiative, and said that the league is not in favor of either a recapture plan or a pooling plan by which some railroads would be required to give up earnings to others. "In the natural course of events," he said, "we will have a number of well-balanced systems."

State Commissions Object to Statutory Rule

John E. Benton, general solicitor of the National Association of Railroad and Utilities Commissioners, went a step farther on January 27 by declaring that Section 15a should be repealed *in toto* and *ab initio*, as "uneconomic and unscientific." "We should make a frank departure," he said, "from an attempt to fetter the judgment of a rate-making tribunal by a statutory rule and return to the good old constitutional rule, upon which no one has yet been able to improve, which leaves the rate-making authority to fix those rates which are just and reasonable," and he said the association favors H.R. 7117 with some amendment. It is opposed to the rate base provisions of H.R. 7116 upon the ground that it would continue in substance the "same unworkable statutory rule" which is now in Section 15a, but also sees "danger" in 7117, which proposes to revise Section 15a instead of repealing it, in giving directions to the commission as to what it shall consider in the exercise of its duty to fix rates. "We have no objection," he said, "to language which will make clear that no reversal is intended of the policy of adequate maintenance for a national system of transportation but further than that we think Congress cannot go without having its language misconstrued and misused." Mr. Benton pointed out that Section 15a was opposed by the association in 1919 and that in seven annual conventions from 1921 to 1931 it has memorialized Congress to repeal it.

"The truth is that Section 15a has broken down," Mr. Benton said. "No attempt to apply the rule has been made. In the twelve years that the section has been in effect the railroads have never received the 5 3/4 per cent fixed under 15a, because to produce that average return on all the roads would require rates so high that traffic would not move. On the other hand, the recapture features of the law are unworkable. To administer them requires a valuation of each road earning an excess each year. Out of 425 systems believed to have earned an excess in one or more years since 1920, the commission has completed hearings and made recapture decisions in only seven, involving a total of only \$1,027,973, including only one case of importance, the R. F. & P. H. R. 7116 would combine all the investments of all the roads in a group and would thus produce an 'aggregate investment rate base,' and would direct the commission to allow rates to produce a fair

average return upon that rate base. Any statutory mathematical rule is impossible of application. It is unjust to the public because it aims to compel the payment of returns upon roads which do not earn revenues by revising the rates upon all lines. This in times of prosperity gives to some lines larger returns than are necessary, but this excess money does not reach and benefit the weak lines."

It was left to Mr. Benton to show in plain words the extent to which recapture for the past is still in the future, when he pointed out that because of the requirements of the law the recapture loan fund would be of little use if it existed. "But it does not exist," he said. "Twelve years after Section 15a was enacted the commission has been able to collect only about one-half of one per cent of the estimated excess which has been earned. If the recapture provisions are repealed for the future but not for the past and attempt is made

to collect recapturable excess since 15a was enacted the commission will be involved in litigation for a decade or two. The commission has barely scraped the surface, so far as recapture is concerned. The situation has a ludicrous aspect apart from its seriousness. I believe it is no exaggeration to say that no such gigantic program of litigation was ever before contemplated, much less undertaken, by any government at any time. In dealing with the present situation it is desirable that we should face facts as they are. Repeal of the recapture provisions will not mean giving the railroads \$378,000,000. The Interstate Commerce Commission neither has that amount, nor any prospect of getting it. The commission has about one-half of one per cent of that amount under its control and the commission has completed investigations which enable it to make claim to about three-tenths of one per cent more, but it does not know just how to go about to enforce the claim."

Reasons for the Railway Land Grants

Created as constructive factor to increase value of public domain after failure to sell land

By George R. Martin

Executive Vice-President, Great Northern

To understand the railway land grants, it is necessary to recall some of the early history of this country and the relation which the grants had to the nation's development. The 13 original states had an area of approximately 218,000,000 acres. After the Revolutionary war, a peace treaty was signed with Great Britain in 1783, which extended the boundaries of the United States westward to the Mississippi river, northward along the Great Lakes and south to the southern border of Georgia. This gave our country a total area of about 531,000,000 acres, the area having been more than doubled by this treaty.

Twenty years later, in 1803, the United States negotiated the Louisiana Purchase from France, again more than doubling the area of the nation by the addition of some 757,000,000 acres. The price of the Louisiana Purchase was approximately \$15,000,000, so that the cost of this land to the government was about 2 cents an acre.

This territorial expansion continued rapidly. In 1819, the purchase of Florida from Spain added nearly 38,000,000 acres. In 1848, the treaty of Guadalupe Hidalgo brought in more than 334,000,000 acres in California and the southwest. Then came several smaller purchases: 61,800,000 acres from Texas in 1850 and 29,000,000 acres from Mexico in 1853. The last large addition was Alaska's 370,000,000 acres, bought from Russia in 1867. Thus, in 84 years, 1783 to 1867, the territory of the United States jumped from 218,000,000 acres to more than 2,000,000,000 acres, a ten-fold increase.

One of the greatest of the national problems became that of settling this enormous acreage. There were vast stretches of wilderness rich in productiveness but isolated far from the consuming centers and ports. The

condition is well illustrated by the fact that the Federal government offered millions of acres of this land to settlers at \$1.25 an acre, but found it impossible to make sales.

A clamorous demand developed for the extension of railway lines across the Mississippi Valley to provide the needed transportation. With railroads, it was argued, would come settlers to till the virgin soil and ship their products to the East and Europe. This would mean an influx of money into the young states, growth of towns and cities, addition of idle lands to the tax rolls—in a word—the building of a prosperous agricultural empire.

Then came the question: Who was to supply the money to build these railways? Investors felt that the benefits which might accrue to the railways were more distant and less certain than those which the general territory would receive. It was likely to be years before railways which might be built into the wilderness could show a profit, and capital proved largely unobtainable for the early railway ventures. Such was the situation just prior to 1850, which year marked the beginning of the land grant era.

Investors Needed Inducements

Public officers decided that some inducement must be offered investors to persuade them to assume the risks of building railways into these vast undeveloped areas. Congress recognized that the building of railways would add appreciably to the value of this great public domain and that if a portion of this new wealth which the building of the railways would create, could be offered to those assuming the risk of building such railways, capital then could be obtained for their construction. That was the theory behind the land grants—the encour-

agement and protection of the early railway builders by granting them an opportunity to share in the increased wealth which their efforts and risks were expected to create.

A general plan was adopted of ceding each alternate section of land along a right-of-way to the railroad company. In this way, the government kept possession of one-half of the property adjoining the tracks. By raising the minimum price of such acreage from \$1.25 an acre to \$2.50, the government received exactly as much revenue from the sale of its half as it had tried unsuccessfully to get for the entire amount. Thus the government lost absolutely nothing, was able to sell its lands and greatly expedite the development of the great western public domain.

Provisions were attached to the grants of Federal land, requiring the roads that accepted them to give the government, for all time, certain rebates on the cost of handling government business. These rebates are so substantial that the railways are repaying the government the original value of the land grants every 25 years.

Only about 50 railroads received any grants, and the total amount of land divided among them was approximately 155,000,000 acres. The first grant which was typical of many others, consisted of 2,505,000 acres ceded to the State of Illinois, which, in turn, deeded it to the Illinois Central. This was in 1850. An examination of the financial aspects of the Illinois Central grant will aid in a clearer understanding of how the railroads are repaying the government for the grants.

The Illinois Central received approximately 2,500,000 acres. This land had been on the open market for about 25 years at \$1.25 an acre with no purchasers. The Illinois Central, then, could have bought that land for \$3,100,000. This amount is the largest possible figure that can be set on the government's contribution to the building of that railway.

In partial return for this value the Illinois Central agreed to pay the state of Illinois 7 per cent of its gross earnings annually, in lieu of general taxes. In addition, since 1876, it has had to carry mail at 20 per cent less than the regular rate, a provision applying to all land grant roads. These lines also must carry government troops and materials for only 50 per cent of regular rates.

Up to October 31, 1930, the Illinois Central had paid in land grant taxes to the state of Illinois more than \$80,791,000. Savings to the Federal government by reason of land grant rates on freight, passengers and mail moved over the Illinois Central amount to more than \$8,778,000, according to the company's records.

Taking half of the \$80,791,000 in taxes as excess over what would normally have been paid, there is left a total contribution to state and Federal governments by the railway in cash and service as follows: Excess taxes to state \$40,395,000; savings to Federal government, \$8,778,000; total payment for land grants to date, \$49,173,000. And these payments, under existing laws, must continue as long as the Illinois Central is in operation.

Up to October 31, 1930, the net sum realized by the Illinois Central from the sale of its land grant property was \$23,220,000. Obviously the railway company would have been far better off if it had borrowed \$3,100,000 and bought its land outright instead of accepting it as a "gift."

Every land grant railroad in the United States is paying for its "gift" in similar fashion. Some must transport government goods entirely free.

Even non-grant roads, such as the Great Northern, are penalized because where such a line is in competition with a land grant railway, it must reduce its rates to the level of the land grant carrier in order to obtain any business from the government. Thus, the Great Northern which carries fast mail, does so at reduced rates because of the Northern Pacific land grants.

The Northern Pacific was one of the recipients of a large grant, its total government acreage being somewhat more than 32 million acres, of which about five million acres remain unsold. Grants received by predecessors of the Great Northern totaled only 3,300,000 acres. The Great Northern itself never received any Federal land grants, but it is obliged to meet "land grant" rates on all competitive government freight.

Let us look at the land grant situation as it affects the railways as a whole. Government reports show that the total of all grants to rail lines was 155,504,000 acres. To June 30, 1930, 132,173,225 acres had actually been patented or certified to the carriers.

As to the value of this land, although it was listed by the government at \$1.25 an acre, the average price at which public lands were sold in the land grant period from 1850 to 1870 was 94 cents an acre. Some was sold at 41 cents an acre, and the highest figure was \$1.67.

Taking 94 cents as the actual average value, the railroads have received title to lands worth \$124,243,000. If we figure the land at what it cost the government in the Louisiana Purchase, about 2 cents an acre, the total value of the land grants would be only \$2,643,000.

A study by the Bureau of Railway Economics indicates that as a result of the various land grant rate reductions, the government's yearly bill for freight and passenger transportation is 12 to 15 per cent lower than it would be if regular rates were paid the railroads.

Reports of the United States Budget Bureau warrant the estimate that the government spends for rail transportation, exclusive of the postal service, from \$25,000,000 to \$30,000,000 a year. Using \$25,000,000 as the amount expended, this would represent more than \$3,000,000 a year saved to the government by reductions on freight and passengers. Add to this the \$2,000,000 a year saved on land grant mail rates and we have more than \$5,000,000 saved annually.

Placing the value of the total rail land grants at \$124,243,000, it will be seen that the railroads are repaying the government the value of the grants every 25 years. Furthermore, some of the payments have been going on for 75 years, and all, presumably, will continue forever, or as long as the railways operate.

Another illuminating fact is that many of the land grant railroads, notwithstanding the government aid, went bankrupt while trying to establish themselves on a paying basis. This demonstrates beyond question that the risks which capital incurred in these pioneer railway building enterprises were real and not merely fancied. Examples are the Northern Pacific, which twice went through bankruptcy, the Union Pacific, the Atchison, Topeka & Santa Fe and the Chicago, Rock Island & Pacific. It is easily seen that some unusual means was necessary to induce investors to risk their capital in such projects as the early day railroads.

As to the later disposal of the land grant property, it was the accepted policy of the railroads to sell the land as rapidly as possible to individual settlers, as the carriers' interest lay in getting the country developed so as to produce freight and passenger traffic. All in all, there is no question but that the land grants represented a clear-cut transaction in which the government got far the best of the bargain and will continue reaping benefits as long as the railroads continue to operate.

Electric Rolling Stock and Substations

(Continued from page 204)

rate determination of how much the motor will heat under certain load conditions. A method has been developed for calculating within narrow limits the heating effects to be obtained. The method can be applied to a wide range of motor sizes and comparisons of calculations with results obtained in practice show the method to be accurate.

Rectifiers Built in Sections

The reliability of mercury arc rectifiers decreases at a greater rate than size increases. The cost of manufacture of the larger sizes is greater per kilowatt than that of the smaller sizes, and efficiency falls off with increase in size. A large number of small rectifiers would mean increased space requirements and multiplicity of control. To avoid these difficulties the Westinghouse Electric & Manufacturing Company has built a single rectifier with four 750-kw. tanks to take the place of one 3000-kw. unit. Two pumping systems and two valves permit the removal of any of the four sections without loss of vacuum in the other three.

Preparing Substations for Operation

To insure a minimum of train delay with a maximum of protection under electric operation, the Pennsylvania Railroad has worked out a thorough method for preparing substations for electric operation. Three groups of tests are made as follows:

Preliminary tests are first made without d.c. control or a.c. power. These include determination of the polarity of transformers, a break-down test of transformer and circuit breaker oil, a Megger test of the transformers, a test of the transformer tap changing device, the manual operation of switching equipment, inspection of interlocking equipment and hand operation of relays.

The second group of tests are made with d.c. control power but without a.c. power. These include tests for grounds on control circuits, a check of all light indications as devices are operated either from substation controls or from controls in the nearest railroad tower, a check of power operation of interlocks and the manual operation of relays.

Final tests are made with both d.c. control and a.c. power. Voltage is first built up slowly on the transmission line and allowed to "soak" for five minutes. Full voltage is then applied suddenly two or three times. Transformers are then connected and voltage applied as before. After the substation circuits are "phased-out" all substation equipment is energized. Other tests are then made as follows: Calibration of potential device; reduced voltage ground test on highspeed breakers; reduced voltage test on 11-kw. trolley buses; reduced-voltage test for transformer internal faults; phasing and insulation test of catenary system; full-voltage ground test on transmission line; full-voltage short circuit test on transmission lines.

THE GERMAN RAILROAD COMPANY, which began some years ago increasing the length of its rails to 30 meters, is now experimenting with rails 60 meters, or more than 196 feet long. More than 2,500 miles of track are now laid with 30-meter rails, and over 40 miles have been equipped with rails 60 meters long.

Communications . . .

The Shorter Working Day

HOLYOKE, MASS.

TO THE EDITOR:

The editorial in the *Railway Age* of January 2, 1932, "Beginning of 1932 Marked Turn of the Tide," and particularly the section headed "Unemployment and Reduction of Working Hours," suggests the following thought:

Taking life as a whole, and assuming that every man has to do his share of the labor of the world, no matter what kind of work it is, what is the real purpose of reducing the hours of labor per day? Let us assume for argument's sake that all forms of labor, whether artistic, menial, or executive, may be treated like industrial labor. Then it would be fitting to say that a reduction in hours of labor per day (per man) is for the purpose of increasing leisure, which is ultimately the advancement of civilization. That leisure is an essential factor in advancing culture is amply illustrated in history, which shows that civilization originated and advanced most rapidly in the warm climates where nature did a great deal of the work and thus provided man with leisure.

Increased leisure makes possible an increase in knowledge and education, which brings with it an increased demand for luxury. Increased luxury means that the average consumption per man per day is increased. By consumption we mean that of all things combined—food, clothing, shelter, amusement, etc. If the average consumption per man per day increases, the total consumption of the world increases, which means the total production of the world must increase and, likewise, the average production per man per day.

Now, increased production per man per day can only be brought about in two ways: (1) By increasing the hours of labor per day, assuming that the average production per man per hour is constant. (2) By increasing the production per man-hour and retaining the same number of hours per day, or the production per man-hour can be increased so much that the number of hours per day can actually be decreased. In general, there is only one way in which the production per man-hour can be increased, and that is by means of machinery.

In order to decrease the hours of labor per day the production per man-hour must be increased. Considerable progress has been made in this direction. Take, for example, the production of a machine operator per hour, which has been increased tenfold by means of his machine. But we must remember that the above theory applies to the labor of the world taken as a whole, including common laborers, skilled labor, professional men, executives, etc. Of all these, the men operating machines are only a small percentage. Without making a thorough study of the matter, I should say that it is anybody's guess as to whether there are machines enough in the world to increase the average production per man-hour sufficiently to reduce the number of hours of labor per day 25 per cent (from eight to six).

That it is a desirable thing for the general working day to be shortened I believe is undoubtedly true. A great many years ago a 12-hour day was quite the usual thing. Ten hours a day then became the required maximum in organized labor, and this was later reduced to eight. This process has been accompanied by a general increase in the standards of living, and also in the education of the laboring people.

As a practical matter, even assuming that the world is theoretically ready for a shorter working day, it would seem that the present time is unpropitious for a step which would require far-reaching financial readjustments in all industries. Times of prosperity, when industry has a little cash to spare for an experiment of this nature, would seem much more advisable. As you have pointed out, a shorter day would not increase employment permanently, and the cost of production would be momentarily increased so that the cost of living would rise (in terms of real wages, i.e., purchasing value of dollar) until the balance of production and consumption was again restored. Only after extended readjustment in the industrial world would the evils of increased cost of production be overcome and the benefits of more leisure become apparent.

H. M. C. LUYKX.

Odds and Ends . . .

Bureau of Safety, Please Note

There may be an idea for Director Borland and his department in the news which came recently from Moscow. Found responsible for a wreck involving loss of life on the Russian-Siberian railroad, a train dispatcher, a guard, a conductor and a station master were sentenced to death. Another railroad man received a maximum prison sentence of 10 years, another got 7 years and still others were sentenced to shorter terms.

The First Steam Engine

Who did build the first steam engine in the world? Ordinarily credit is given to James Watt, but the director of the Technical Museum of Stockholm, Sweden, has other ideas. He says that the first steam engine was built in 1728, eight years before the birth of James Watt, and its constructor was Maaron Triewald, a Swedish professor of astronomy. The Swedish professor's steam engine is supposed to have been used for seven years at the mines in Dannemora in central Sweden, until lightning destroyed it in 1735.

A "Buy British" Train

They do things with a flourish in Great Britain. Lately, in order to stimulate the consumption of British products in the British Isles, a "Buy British" campaign has been carried on. As a part of this campaign the Cornish Riviera Express of the Great Western railway was converted one morning into a "Buy British" train to mark the opening of the second week of the Empire Marketing Board's campaign. Engine and carriages were liberally decorated with posters and the train was signaled out of Paddington station by J. H. Thomas, secretary for the Dominions. The Lady Mayoress handed to a special messenger baskets of Empire fruit and produce to be presented to the Mayors of Plymouth and Exeter. Standing on the engine, Mr. Thomas delivered a short address concerning the "Buy British" campaign.

Railway Earns a Profit

When a railroad operates in times like these and still shows a margin of revenues over its expenses and charges, that is news. Other systems had their troubles, but the Hanover railway was "in the black" in 1931. The Hanover road is only two and one-half miles long and operates between Hanover, Ill., and North Hanover, connecting at the latter point with the Chicago Great Western. The town of Hanover, center of a stock-raising region, had no railroad service until the little line connecting it with North Hanover was constructed several years ago. The 300 stockholders of the railway received no dividends in 1931, but the annual report, recently issued, showed that the line earned 71.3 cents a share during the year. Members of the National Railway Appliances Association may wish that other larger railroads would follow this short line's example, for the entire net income of \$214 was appropriated for improvements to the track.

The "Florida Special"

The "Florida Special," first fast de-luxe train to operate between New York and Miami, Fla., is now in service for its forty-fifth season. The "Florida Special" was inaugurated back in January, 1887, when Florida was only beginning to enjoy any sort of a reputation as a winter resort. Unquestionably it is one of the historic trains of the country. It was the first train to carry electrically-lighted vestibule cars. A description of the "Florida Special," as it appeared in the newspapers of 1887, follows: "These trains are so connected by means of vestibules that they constitute one continuous car. Through this ingenious device, the entire train is made to form a series of apartments, so that the traveler may pass from one end of it to the other. The trains are composed exclusively of draw-

ing room cars, containing library, reading room, smoking room and buffet. Exterioly they will present the appearance of a block of artistically furnished houses, while interiorly they will rival in varied living conveniences a richly appointed city mansion."

Deer Season Still Open

This is turning out to be a hard year for deer. On several occasions recently we have reported the demise of bucks and does which disputed the right-of-way with railway trains. Advices of similar mortalities continue to come in. "The Railroad Employee" reports that an Erie milk train bagged a deer between Susquehanna and Port Jervis. Probably the championship, however, should be awarded to the Oregon-Washington Railroad & Navigation Co. train which crashed into a herd of deer near La Grande, Ore., killing five of them.

The Lure of the Open Road

(The following story, we hope, does not refer to a trip in a motor bus operated by a railroad.—EDITOR.)

It has to be done to be fully appreciated. The glaring ads portraying the advantages of the "improved" mode of travel via bus are indeed compelling. The urge got us last summer to participate in one of the 250-mile jaunts, made under the cover of darkness, as we are more or less familiar with night travel. Considering the bus fare was just about the amount charged for Pullman accommodations, it surely seemed alluring. Assuming beforehand there could be no possibility of obtaining the same degree of rest, attired in one's daytime apparel and draped in a reclining chair, as afforded by present-day Pullman service, yet it did seem logical that Nature would assert itself and sleep would come at intervals from the sheer exhaustion of the passenger.

There is an old adage, "The mind is strong, but the flesh is weak." It just isn't so on these lengthy bus trips, since, of necessity, the flesh must be strong and the mind weak to balance the situation. Paul Revere achieved lasting fame when he guided his charge around the vicinity of Boston for a few hours in the dead of night, but we can wager his haunches were in a lot better shape after his exploit than the glutton for punishment who elects to careen around in a bus for a dozen hours. Of course, there are the usual "comfort" stops, when the "Skipper" dismisses the class for a limited period, and happy is the passenger who can adjust himself to act in sympathy with the prescribed stops. We had read how difficult it is for the aviators on their ocean hops to remain awake, while listening to the drone of the motors. That's the bunk, and even the pleasant combination of motor drone and shifting of gears is not conducive of getting one into the arms of Morpheus.

We watched the road with the "Pilot," put our feet through the floor boards (figuratively) braking for him, kept our eyes on him while he leaned over to talk with the cute little lady sitting at the left in back of the driver's seat, and wished our conveyance was provided with flanged wheels traversing steel rails. We wondered if the chauffeur's daily slumber had been sufficient to assure his wakefulness during the entire trip, and at each "eating stop" looked carefully to observe that he partook of the second cup of black Java. We figured the reduced tariff might represent the willingness of the company, in providing the passenger with the difference between the bus fare and the amount of railroad fare, to recompense for his (the passenger's) diligence in sitting up all night with the driver.

After much needed adjustment à la chiropractic, on arrival at destination, several applications of liniment, twenty-four hours of rest, which had to be deducted from our holiday period, we were as good as new. Totaling up the loss of time, expenditures for "eats" at the various stops, and the wear and tear on the human structure, the inexpensive trip turned out to be an expensive, uncomfortable and nerve-wracking adventure.

A TRAVELING MAN.

NEWS

Lake Cargo Coal Rates Are Left Undisturbed

I. C. C. dismisses complaints of northern operators seeking to widen differential

Declining to interfere with the present adjustment of lake cargo coal rates from the southern and northern coal fields to Lake Erie ports for transshipment, which was worked out as a "compromise" by the railroads a little over two years ago, the Interstate Commerce Commission on January 21 announced its dismissal of complaints filed by the Pennsylvania and Ohio coal operators who had sought to widen the differential by which their rates are less than those from the southern fields. Although the commission says that the rate adjustment may be more favorable to the southern operators than would be the case if it were based upon distance alone, and that possibly if it were faced with the task of prescribing maximum reasonable rates from both fields it would not, upon the record, find transportation conditions as a whole so dissimilar as to justify the prescription of a materially lower level of rates from the southern than from the northern fields, the present rates are not unduly prejudicial or unduly preferential. Under the "compromise adjustment" of January 1, 1929, the rates became \$1.46 from the Pittsburgh district, \$1.81 from the high volatile southern districts, and \$1.96 from the low volatile districts, and the basic differentials became 35 and 50 cents. The commission in 1927 had prescribed rates including a 45-cent differential and when the southern roads sought to reduce this by a 20-cent reduction it ordered the rates cancelled; but its order was enjoined by a federal court and the compromise 35-cent differential was put into effect. The controversy as to this adjustment has been before the commission in various cases since 1912. It has caused much agitation in Congress and this has influenced the election of United States Senators and the appointment or confirmation of two or three commissioners.

The commission's report says that the record indicates that operating conditions over the routes from the southern districts other than Fairmont are somewhat more favorable than over the routes from the northern districts, but that against this must be considered the better balanced traffic over the routes serving the northern districts and Fairmont, due to the iron ore movement in the direction of

"It was a great mistake to transfer damage cases from the courts to the Commission as an original resort, and it is a mistake that should be rectified, for, as the Commission itself has pointed out at intervals during the last fifteen years, the volume of litigation has largely strangled the Commission's efficiency for the conduct of more important administrative work—quite apart from its strongly 'champertous' flavor. It is, frankly, an abuse that calls for remedy."

—Thomas F. Woodlock in the *Wall Street Journal*.

those districts. It also points out that in this case the northern carriers had joined with the southern carriers in opposition to any widening of the differentials and that "in the exercise of their managerial discretion and under the stress of competition, carriers often establish rates and rate relationships which we could not require them to establish. When such rates appear as a whole to be in the public interest, they should not be condemned merely because they are not based on the same distance scale of maximum reasonable rates." The report also states that the movement of lake cargo coal has been affected by many and varied circumstances and conditions and that the rapid shift in tonnage from the northern to the southern fields, which began in 1924, "obviously was not due to the freight rate differential." Beginning with 1928 a definite swing of tonnage back to the northern districts is shown. Commissioners Eastman and McManamy dissented.

Passenger Service Operated at a Loss

Railroad passenger service in the western and southern districts and in the United States as a whole was conducted at an actual operating loss in 1930, although there was a margin of revenues over expenses in the eastern district, according to the Interstate Commerce Commission's annual compilation apportioning operating revenues and expenses between freight and passenger service. For the roads as a whole the operating ratio in passenger and allied services for the year was 101.22, while in the East it was 90.23, in the South it was 116.95 and in the West it was 112.19. For freight and allied services the ratios were: United States, 67.59; East, 71.52; South, 65.58, and West, 64.40.

Reconstruction Finance Corporation Operating

Railways may now borrow from government to meet financial obligations

Railroads which have bills payable, bank loans coming due which they have feared they might have difficulty in renewing at reasonable interest, or bonds maturing in 1932, will now have an opportunity to borrow the necessary funds from the government. The conference report on the Reconstruction Finance Corporation bill, including several changes from the forms in which it had been passed by the Senate and the House originally, was adopted in both houses of Congress on January 22 and was promptly signed by the President, who had already announced the appointment of Charles G. Dawes as president of the corporation. Funds providing for the subscription by the Treasury of the \$500,000,000 capital stock of the corporation have also been appropriated by Congress and the corporation will have authority to raise \$1,500,000,000 more, if necessary, through issuance of notes, debentures or bonds.

No information as to the extent to which the railways will resort to the corporation for loans is yet available, because part of the theory of the plan is that the extension of the government's credit to banks and other financial institutions will make it possible for the railroads, industry, and agriculture to obtain necessary financing through the usual channels which might have been impossible otherwise. In signing the bill President Hoover said: "It brings into being a powerful organization with adequate resources, able to strengthen weaknesses that may develop in our credit, banking and railway structure, in order to permit business and industry to carry on normal activities free from the fear of unexpected shocks and retarding influences. Its purpose is to stop deflation in agriculture and industry and thus to increase employment by the restoration of men to their normal jobs."

Although special provision was made in the plan for loans to railways, this was done largely because railway securities are to so large an extent at the foundation of the reserves of financial institutions generally, and it was the hope of the advocates of the law that its most important effects would be indirect, in stimulating business activity and in removing the apprehension that has been the cause

(Continued on page 223)

Study of Six-Hour Day Principle Is Proposed

Congressional resolution directs I.C.C. to investigate and report on the question

A concurrent resolution authorizing and directing the Interstate Commerce Commission to examine into and to determine the feasibility of applying the principle of the six-hour day to the different classes of railway employees was adopted by the Senate on January 22, at the request of Senator Couzens; and a similar joint resolution introduced by Representative Crosser was passed by the House on January 27, in a different form directing the commission to report as to the effect and expense of applying such a principle. The Senate resolution provides that the inquiry shall be made with the aid of an advisory council which would be representative of both management and labor in the railroad industry, and directs the commission to report to Congress on or before December 1.

In asking immediate consideration of the resolution Senator Couzens said that he had received messages from the conference in Chicago between the railway and labor executives who have been negotiating on the proposal for a voluntary temporary wage reduction, indicating that "perhaps the strongest point of difference between them" was the question of the six-hour day proposed by the railway labor organizations. "It has been intimated to me," he said, "that if there were some interest taken by Congress in the feasibility of the six-hour day the brotherhoods might yield that point and thus bring about an agreement between the executives and the brotherhoods. It seems to me, inasmuch as there is considerable agitation for the six-hour day, that Congress might be properly informed through one of its agencies, namely, the Interstate Commerce Commission, as to the feasibility of such a plan." Representative Crosser also had received a telephone call from Chicago just before introducing the resolution, and said that he would urge an early hearing before the House committee. Senator Couzens said that the committee on interstate commerce, of which he is chairman, had considered the resolution and that the seven members present were unanimous in approval.

The preamble refers to the unemployment in the railroad industry as having "reached the point where it presents a grave problem for both employees of railroads and for the transportation system" and states that whereas it has been proposed that the railroads should provide for the adoption of the principle of a six-hour day "there is no adequate information to be had by the government as to the effects of the adoption of such a principle."

When the eight-hour law for train service employees was enacted in 1916 Congress provided for an investigation afterward as to its cost.

The Crosser resolution was considered by the House Committee on interstate and foreign commerce on January 25 and the committee ordered a favorable report on it in a form somewhat different from the Senate text, directing the commission to investigate and report by December 15, "what would be the effect upon operation, service and expenses of applying the principle of a six-hour day in the employment of all classes and each particular class of railway employees because of such application." This omits the provision for an advisory council and includes provision for an estimate of the expense involved.

New Head for Illinois Commerce Commission

G. Gale Gilbert, a member of the Illinois Commerce Commission, has been chosen chairman, to succeed C. W. Hadley, who has resigned to become a candidate for attorney general for Illinois. Paul Samuell, formerly a member of the supreme court of Illinois, has been named a member of the commission to fill the vacancy.

Cars and Locomotives Awaiting Repairs

Class I railroads on January 1 had 6,990 locomotives in need of classified repairs, or 13 per cent of the number on line, according to reports filed by the carriers with the Car Service Division of the American Railway Association. The roads also on January 1 had 10,982 serviceable locomotives in storage, compared with 10,290 on December 15.

There were also 187,666 freight cars in need of repairs, or 8.7 per cent of the number on line. This was a decrease of 6,734 cars below the number in need of repair on December 15, at which time there were 194,400 or 8.9 per cent. Freight cars in need of heavy repairs on January 1 totaled 141,333 or 6.5 per cent, while freight cars in need of light repairs totaled 46,333 or 2.2 per cent.

"Taxes must come down. The burden of governmental costs must be lightened, and budgets must be balanced. We are all interdependent and with purchasing power again available and generally used, then and not until then will prosperity return. Purchasing power is created when there is profit, not when costs exceed selling prices or revenues.

"The tax burden is a very serious and prominent item in cost sheets today. The country is rapidly approaching, if it has not already reached, the danger line of financial stability because of the continued delirious extravaganza of federal, state and municipal spending."

—E. G. Grace, president of Bethlehem Steel Corporation, at the annual Bethlehem sales meeting.

Joint Board Favored For Canadian Roads

Montreal Board of Trade urges tolls for canals, regulation of all transport

Strong representations both for and against truck and bus services, as competitors of the railways, were submitted last week in Canada in connection with the present transport inquiry being conducted by the Royal Commission. Motor transport protagonists appeared before the Commission in Toronto and put up a strong argument for themselves, while a railroad employees' organization waited on Premier L. A. Taschereau in Quebec City to urge that the Quebec Legislature tax trucks and buses more heavily for their use of the highways. The Commission completed its itinerary in Toronto last week and there will be no more sittings for at least six weeks, when the commission will reconvene to consider its report to the Dominion Government. Lord Ashfield, British member of the commission, will leave for England in a few days, while L. F. Loree, American member of the body and president of the Delaware and Hudson, has returned to New York.

The plea for higher motor transport taxation was presented to Premier Taschereau of Quebec by the Ship-by-Rail Association, a railroad employees' organization. The Premier said that Quebec can do little until the Royal Commission has reported for all Canada. The petitioners urged:

"The advisability of placing the operation of buses and trucks under the control of the Quebec Public Utilities Commission, or the Board of Railway Commissioners for Canada, so that they may be compelled to operate under conditions, particularly with regard to rates and working hours, similar to conditions under which the railways are compelled to operate.

"That taxation be imposed upon buses and trucks which will represent a fair proportion of the cost of maintaining and widening existing highways, and building new highways; and

"That a fair proportion of such taxation be paid to the municipalities as a reasonable compensation for the cost of the creation and maintenance of paved streets within the boundaries of the municipalities, and toward the reduction of the contribution of municipalities towards the cost of suburban roads and King's highways."

M. J. Patton, economist for the Canadian Automobile Chamber of Commerce; W. G. Robertson, secretary of the Canadian Automobile Association; and J. D. Buckley, secretary of the Toronto and District Labor Council, last week presented briefs to the Royal Commission at Toronto. The Patton brief dealt extensively with railway-motor competition and he expressed the belief that the railways would, by the operation of economic law, be compelled to recognize these new forms

of transportation and co-ordinate their present service with them.

The motor vehicle, he claimed, had demonstrated its superiority in small lot and short-haul transportation, and he urged that the motor vehicle be recognized as an important integral part of the transportation system and be allowed, under fair and just regulation, to serve the people of Canada in those fields of transportation "in which it has already demonstrated its efficiency, convenience and cheapness."

Mr. Robertson declared the motorists of Canada were already carrying their fair share of taxation, and should not be "subjected to exorbitant taxation which in the end would defeat its purpose."

Mr. Buckley urged proper regulation of motor trucks with definite restriction as to size and weight. He also favored more adequate taxation and higher requirements for drivers.

A significant stand on the Canadian railway question was taken last week by the powerful Montreal Board of Trade which submitted a memorandum to the Royal Commission in which it denounced the government's ownership and control of the Canadian National and urged the establishment of a common governing board for that property and the Canadian Pacific.

The Board's finding records that "the council is not impressed by the results attained by government ownership and operation of any public utility, and in any final adjustment it is opposed to government ownership of Canada's railways." The memorandum recommended that a common governing board be appointed with the "widest powers possible under the circumstances," to decide on such questions as extensions, duplication of services and facilities, and competitive services between the two railways. Membership in this body would consist of representatives from both transportation systems.

The proposal was also made that the Dominion Government invite the provincial governments to a conference to agree upon common legislation to be adopted by all provinces with regard to control, regulation, and taxation of truck and bus services.

The Board also favors the closest cooperation between the roads to eliminate duplication of facilities and competitive services; an investigation to determine the feasibility of joint operation of telegraph, hotel and express services; placing of pipe lines and canals under the regulation of the Railway Commission; and the elimination of free passes except for employees. Tolls should be charged for package freight carried on canals, the memorandum continues, and the number of railway commissioners should be reduced and their salaries increased.

Canal Traffic for 1931

The total number of commercial vessels transiting the Panama Canal during the calendar year 1931 aggregated 4,972, and the total tolls collection was \$22,530,820. The number of transits declined 913, or 15.51 per cent, in comparison with 1930,

while tolls collections decreased \$3,615,204, or 13.83 per cent. The percentage loss in tolls was less than the percentage decline in transits owing to the greater average tonnage of vessels. The month showing the largest traffic during the year was January, with 476 transits and \$2,108,140 tolls collection. Gradual declines occurred in succeeding months with slight interruptions until November. In December the lowest point in tolls collections was set with \$1,757,869. The decrease in canal traffic is attributed to the continued adverse conditions throughout the world.

Katy and Frisco Pool Passenger Service

The St. Louis-San Francisco and the Missouri-Kansas-Texas on January 24 pooled their passenger service between Tulsa and North Texas points, thus eliminating two trains each way. Under the new arrangement a train leaves Tulsa at 10:50 p.m. over the Frisco for Denison, where it is taken over by the Katy which delivers the cars at Fort Worth and Dallas at 7:45 a.m. Returning cars leave Fort Worth and Dallas at 11:00 p.m. and arrive at Tulsa at 7:40 a.m. Heretofore the Frisco operated one train in each direction and the Katy two trains.

Citrus Fruit Rates From Florida Reduced

Tariffs reducing the freight rates on citrus fruits from Florida to points north of the Potomac river to 82 per cent of the present rates have been filed with the Interstate Commerce Commission to become effective on February 22 for an experimental period ending June 15. The rates are being reduced, following conferences between railroads and growers, to meet the competition of itinerant truckers who have been engaged not only in transportation but also in the buying and selling of fruit. A 25 per cent reduction to points in the South was recently put into effect on short notice.

Western Grain Rates to Be Restored

Pursuant to the decision of the Supreme Court of the United States on January 4, in the western grain rate case, the Interstate Commerce Commission on January 23 vacated its orders that became effective August 1, 1931, and issued sixth-section authority to the carriers to file tariffs, effective on not less than ten days' notice, cancelling the rates that became effective August 1, 1931, and that are now in effect, and re-establishing the rates that were in effect July 31, 1931. Chairman Porter and Commissioner McManamy voted against ten days' notice and favored the statutory thirty days. The railroads had asked that the old rates be restored on five days' notice.

R. R. Credit Corporation Completes Organization

The Railroad Credit Corporation, formed by the railroads for the purpose of collecting, receiving and administering through loans to needy rail carriers, funds growing out of the emergency increase in freight rates allowed by the Interstate Commerce Commission in Ex Parte 103, has announced the following permanent

organization: President, E. G. Buckland, chairman of the board of the New York, New Haven & Hartford; vice-president and comptroller, E. R. Woodson; secretary, William J. Kane (Washington, D. C.); assistant secretary, M. K. Dugan; treasurer, Arthur B. Chapin; counsel, Daniel Willard, Jr.

Jersey Central Ferries to Serve Breakfasts

As a result of a recent innovation in suburban service, any of the 20,000-odd commuters traveling daily from New Jersey to New York via the Central of New Jersey who miss breakfast at home may now obtain it on the railroad-operated ferry boats which carry them from its Jersey City, N. J., terminal across the Hudson river to Liberty street, Manhattan. Following a week's experiment on two boats, the railroad, on January 25, established lunch counters, selling coffee and crullers at popular prices, on the upper decks of all train boats operated from Jersey City to Liberty street between the hours of 7 and 9:22 a. m.

I.C.C. Prescribes Interstate Rates for Missouri

As the result of an investigation instituted upon a petition filed October 29, 1928, by the Missouri Public Service Commission asking it to determine what would be reasonable class and commodity rates for the future between all points in the state of Missouri for application to interstate traffic, the Interstate Commerce Commission has made public a report and order including a series of findings based on the scales which it prescribed in the western trunk line class rate case. The purpose was to obtain a joint re-examination of the state and interstate rate structures to eliminate, as far as possible, the existing conflicting rate bases and to establish in lieu thereof rates which could be made applicable to state and interstate traffic alike. Hearings were held jointly before representatives of the state commission and an examiner of the federal commission, and various separate cases were consolidated with the investigation.

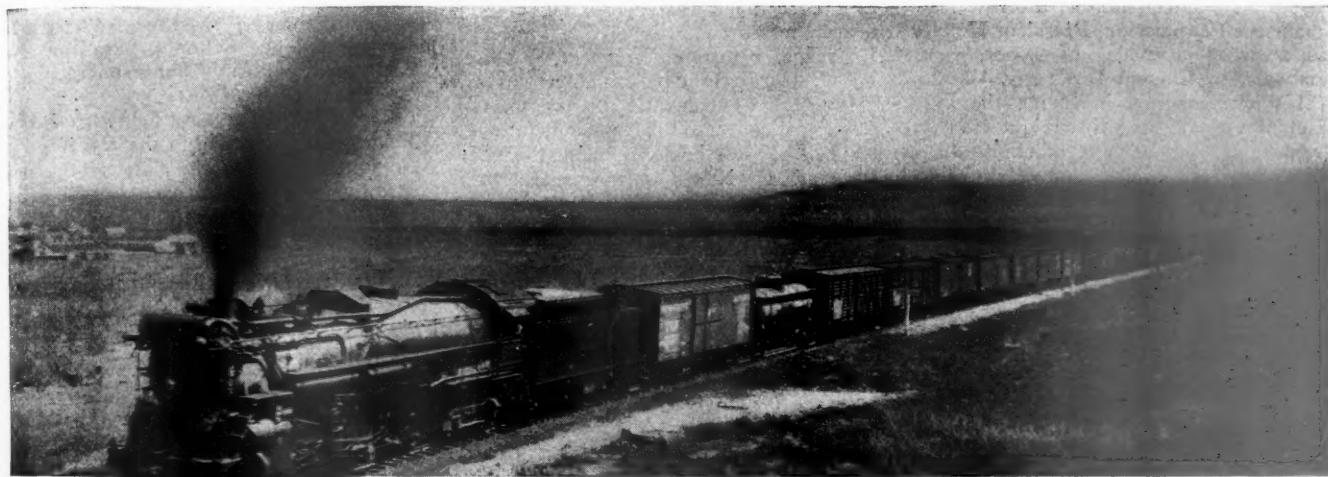
Special Rates and Excursions in the East

Eastern roads which offered reduced round trip fares during the Christmas holiday period reported a substantial increase in the number of passengers, but no striking instances of increases in gross revenues. The opinion prevails, however, that the decrease in revenue might have been considerably greater had the rates not been offered. These special rates, one and one-third of the one-way fare for the round-trip, were not valid prior to December 24 and thus were not available to college students, the holidays of most of whom began on December 18 or 19. Bus lines were reported to have handled a considerable volume of this traffic, by offering special rates and appointing students as agents for the sale of tickets.

Low-rate Sunday excursions in Eastern territory are showing some favorable results since the introduction of the new

MODERN LOCOMOTIVES

Are an Economic Necessity



"In freight service modern locomotives have proved their economic value under a wide variety of operating conditions. On the Texas & Pacific modern ten-coupled locomotives, replacing 2-10-2 locomotives built prior to 1920, on a division with a succession of grades running from 1.1 per cent to 1.4 per cent, permitted an increase in train load of 45 per cent with an increase in average speed over the division of 33 per cent, and a reduction in fuel consumption per thousand gross ton-miles of 42 per cent."

Railway Age, November 21, 1931.

● The modern ten-coupled engines now operating on the Texas & Pacific are Lima Super-Power Locomotives. « « What they are doing on this road they can do elsewhere to the benefit of the operating ratio.



LIMA LOCOMOTIVE WORKS • Incorporated • LIMA • OHIO

lower rates of fare. Sunday excursions being operated between a number of points at rates approximating or even below one cent a mile have resulted in large increases in traffic and substantial profits. The all-expense excursions from New York to the Adirondacks and Montreal have attracted considerable public interest, but travel so far has been retarded by the mild winter and consequent lack of snow in places which ordinarily are the scene of winter sports.

Medal of Honor Awarded

Upon recommendation of the Interstate Commerce Commission, President Hoover has awarded a medal of honor, posthumously, to Elwood D. Crotty, because of his heroic action in saving the lives of employees on an Erie freight train at Graham, N. Y., on September 16, 1931.

The boiler of his locomotive exploded, causing the instant death of the engineer and brakeman and fatally injuring Fireman Crotty, who was thrown clear of the exploded locomotive; notwithstanding his serious injuries he secured a marker lamp from the rear of the tender and went back and flagged the following fast freight train. After flagging this train he collapsed; he was removed to a hospital and died the following day.

Instances of Excess Service Greatly Reduced in 1931

The number of instances in which railroad employees were on duty for periods exceeding those named in the hours of service law, in the fiscal year ending June 30, 1931, was only 7,089, according to the summary published by the Interstate Commerce Commission of the monthly reports submitted to it by the carriers. This total is less than half that for the preceding year, which was 16,912, and the report shows an almost steady reduction each year from 32,265 in 1927, 20,741 in 1928, and 22,941 in 1929.

Employees in train service were continued on duty for longer periods than 16 consecutive hours in 2,673 instances in 1931, as compared with 5,591 in 1930.

Telegraph operators were on duty more than 9 hours in continuously operated day-and-night offices in 3,818 instances, as compared with 10,251 in 1930. The term "instances" refers to individual employees.

A. S. C. E. Holds 79th Annual Meeting at New York

The seventy-ninth annual meeting of the American Society of Civil Engineers convened at New York at the Engineering Societies building on January 20-23. Two features of special interest to railway men were the formal conferring of honorary membership upon George W. Kittredge, consulting engineer, Yonkers, N. Y., formerly chief engineer of the New York Central, and the presentation of a paper on "Bridge Foundations," by J. J. Yates, bridge engineer, Central Railroad of New Jersey. Herbert S. Crocker, consulting engineer, Denver, Colo., was elected president of the society, and Arthur S. Tuttle, consulting engineer, Board of Estimate and Apportionment, New York, and David C. Henny, Portland, Ore., were elected vice-presidents.

Club Meetings

The Toronto (Ont.) Railway Club will hold its next meeting on Monday evening, February 1, at the Royal York Hotel, Toronto. J. V. Neubert, chief engineer, maintenance of way, New York Central, will present a paper on Railroad Maintenance And Its Improvement.

The Cincinnati (Ohio) Railway Club will hold its next meeting at Hotel Gibson, Cincinnati, on Tuesday, February 9. The dinner will be at 6:30 o'clock. "Railroads, and Their Problems" is the subject of a paper to be presented by W. R. Cole, president of the Louisville & Nashville.

The Car Foreman's Association of Omaha, Council Bluffs and South Omaha will hold its next meeting in Omaha on Thursday, February 11 at 2 p.m. The discussion will be on the changes in the Interchange Rules.

The Northwest Car Men's Association

will hold its next meeting at the Young Men's Christian Association, Minnesota Transfer (St. Paul), on Monday evening, February 15. The discussion will be on the Interchange Rules.

The Eastern Car Foremen's Association will hold its next meeting on Friday evening February 26, at 29 West 39th Street, New York City. Wesley Dunbar, Delaware & Hudson, will speak on correct wheel shop practice.

The Southern & Southwestern Railway Club will hold its next meeting at the Ansley Hotel, Atlanta, Ga., on Thursday, March 17, at 10 a.m. George V. Williamson, of the International Correspondence Schools, Scranton, Pa., will speak on the Counterbalancing of Locomotives.

Correction.—Tuesday, February 9, (not February 19 as stated in the *Railway Age* of January 23) is the date of the next meeting of the New England Railroad Club. It is to be at the Copley-Plaza Hotel, Boston, 6:30 p. m.

Transportation Bills in Congress

Senator Couzens, of Michigan, has introduced in Congress a bill, S.3188, declaring that shippers are entitled to the enjoyment of rates, services, and practices as published in railroad tariffs, free from restraint except by lawful orders of the Interstate Commerce Commission, and authorizing them to bring suit to set aside orders of the commission changing rates in such a way as to affect them adversely, on the ground that the restraint is imposed by unlawful order.

Senator Tydings and Representative Lewis have introduced bills, S.3155, and H.R.8175, to amend paragraph 4 of section 15 of the interstate commerce act.

Representative Karch has introduced a bill, H.R.8329, providing that six hours shall be deemed a day's work and the measure or standard of a day's work, in contracts for labor and service.

The Senate on January 20 passed without discussion the bill introduced by Senator McKellar, of Tennessee, S.621, repealing that part of the postal laws which authorizes the Postmaster General to

We Spend Too Much For Roads

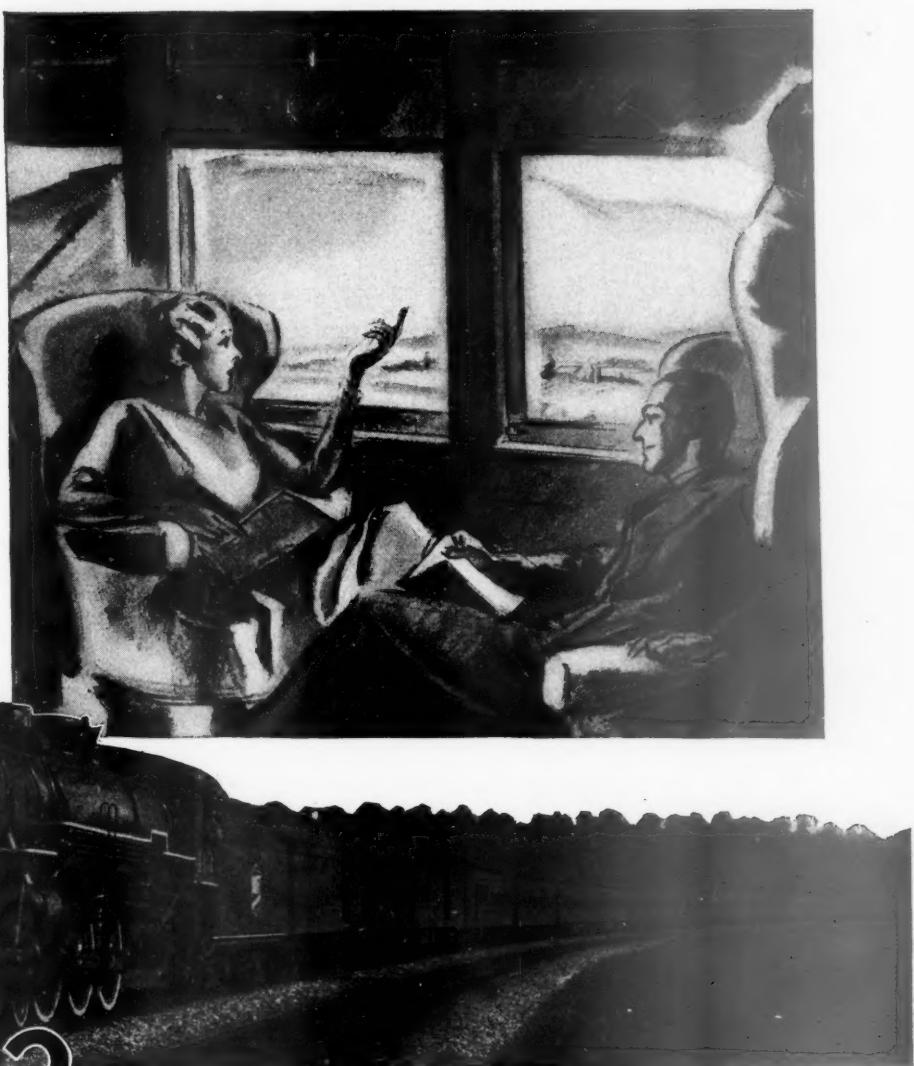
for the income from motor licenses and fuel are as large and even larger than ever.

It is not good State management nor is it fair budgeting to visit the whole burden of the curtailed public revenue on all categories of the public service except one. There must be a reasonable balance between the State outlay for public roads and the State's outlay for all other public services. No such reasonable balance exists when the service of the public highways absorbs from 40 to 44 per cent of the State's revenue dollar.

The first step toward bringing the State services into a proper relationship with one another has already been decided upon—the elimination from the State budget of the special appropriation for highway purposes that has

been made from the general fund. The second step is to divert some of the revenues now ear-marked for highways, to other-than-highway purposes. The gasoline tax, bearing a direct relationship to the use of the roads, should not be disturbed. The motor license tax, now bringing in more than \$6,000,000 a year, bears no direct relationship to road use, and can be partly diverted without legal or moral violence. The city of Norfolk and, as far as we are aware, all other cities in Virginia, apply the revenue from the local motor license tax to general governmental purposes. If such a use of motor license revenue is proper and legal in the localities it is proper and legal in the State.

—*Norfolk Virginia-Pilot.*



3 MKT FAST PASSENGER TRAINS Know The Meaning of BOOSTER Power

The "Texas Special", the "Katy Flyer" and "Eleven O'clock Katy", fast passenger trains of the MKT Lines are hauled by Booster equipped locomotives.

The Locomotive Booster is used for hauling passenger trains because of its economy in providing extra power.

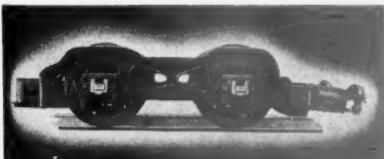
Without The Booster an extra pair of drivers is usually needed, increasing locomotive cost, operation and maintenance expense.

With The Locomotive Booster, extra power is always at hand, for use in starting, in accelerating rapidly to road speeds and as an aid in climbing grades. Booster Locomotives assure smooth starts and on-time runs. They please the traveler by increasing riding comfort. Because of economical operation they are a source of satisfaction to the railroads which use them.



THE FRANKLIN
SLEEVE JOINT

Close coupling reduces overhang and wear and overcomes the tendency for connection to unscrew



THE LOCOMOTIVE BOOSTER

FRANKLIN RAILWAY SUPPLY CO., INC.

NEW YORK

CHICAGO

MONTRÉAL

change the rates and classifications relating to parcel post matter, subject to the consent of the Interstate Commerce Commission. The case in which he is proposing a revision of parcel post rates, including both increases and reductions, is now pending before the commission. The repeal, if it should become a law, would leave the rates to be fixed by Congress.

Representative Swing, of California, has introduced House Joint Resolution 253, to direct the Secretary of the Interior to withhold his approval of the adjustment of the Southern Pacific and Central Pacific land grants pending further investigation. Representative Swing said the occasion was a "surprise claim" by the Southern Pacific, that the government still owes it a million acres of land

in southern California and its proposal to exercise its right by claiming valuable areas in the San Bernardino and Cleveland national forests.

Washington Celebration to Be Country Wide

"Congress, in providing for the celebration of the George Washington Bicentennial this year, declared that the object

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 171 Steam Railways, Including 17 Switching and Terminal Companies.

FOR THE MONTH OF NOVEMBER, 1931 AND 1930

Item	United States		Eastern District		Southern District		Western District	
	1931	1930	1931	1930	1931	1930	1931	1930
Average number of miles operated	242,819.76	242,739.03	60,234.82	60,328.91	46,154.38	46,098.76	136,430.56	136,311.36
Revenues:								
Freight	\$238,458,941	\$311,017,449	\$98,319,923	\$129,164,533	\$46,553,818	\$57,889,537	\$93,585,200	\$123,963,379
Passenger	35,903,822	48,709,934	21,505,874	27,975,387	3,933,837	5,846,885	10,464,111	14,887,662
Mail	8,372,588	8,995,522	3,247,625	3,446,583	1,403,401	1,499,903	3,721,562	4,049,036
Express	5,177,298	8,290,489	2,477,949	3,752,665	798,051	1,286,538	1,901,298	3,251,286
All other transportation	10,384,237	12,685,885	6,073,398	7,264,891	772,380	1,049,119	3,538,459	4,371,875
Incidental	6,469,986	8,300,484	3,717,640	4,616,330	802,073	998,547	1,950,273	2,685,607
Joint facility—Cr.	924,131	1,103,391	268,681	374,804	150,304	193,333	505,146	535,254
Joint facility—Dr.	306,131	255,654	71,184	85,029	24,029	28,867	210,918	141,758
Railway operating revenues	305,384,872	398,847,500	135,539,906	176,510,164	54,389,835	68,734,995	115,455,131	153,602,341
Expenses:								
Maintenance of way and structures	35,263,757	49,229,170	14,478,916	22,230,851	7,710,707	8,753,821	13,074,134	18,244,498
Maintenance of equipment	58,177,808	75,405,778	26,296,279	35,225,671	11,162,980	13,230,705	20,718,549	26,949,402
Traffic	9,375,604	10,051,600	3,656,621	3,884,732	1,750,708	1,878,214	3,968,275	4,288,654
Transportation	118,737,944	146,436,303	56,083,971	68,778,317	19,075,209	23,428,779	43,578,764	54,229,207
Miscellaneous operations	2,929,174	3,820,883	1,461,136	1,854,589	292,486	384,825	1,175,552	1,581,469
General	14,579,089	15,376,683	6,372,759	6,697,723	2,547,172	2,611,685	5,659,158	6,067,275
Transportation for investment—Cr.	556,098	986,475	113,542	157,773	48,183	95,140	394,373	733,562
Railway operating expenses	238,507,278	299,333,942	108,236,140	138,514,110	42,491,079	50,192,889	87,780,059	110,626,943
Net revenue from railway operations	66,877,594	99,513,558	27,303,766	37,996,054	11,898,756	18,542,106	27,675,072	42,975,398
Railway tax accruals	19,968,723	25,716,825	8,690,321	9,897,149	3,706,943	5,049,317	7,571,459	10,770,359
Uncollectible ry. revenues	102,244	58,019	47,601	19,921	12,766	8,131	41,877	29,967
Railway operating income	46,806,627	73,738,714	18,565,844	28,078,984	8,179,047	13,484,658	20,061,736	32,175,072
Equipment rents—Dr. balance	7,612,786	9,098,773	4,375,644	4,724,250	60,626	162,072	3,176,516	4,212,451
Joint facility rent—Dr. balance	2,613,585	2,401,551	1,456,866	1,236,283	254,894	265,267	901,825	900,001
Net railway operating income	36,580,256	62,238,390	12,733,334	22,118,451	7,863,527	13,057,319	15,983,395	27,062,620
Ratio of expenses to revenues (per cent)	78.10	75.05	79.86	78.47	78.12	73.02	76.03	72.02

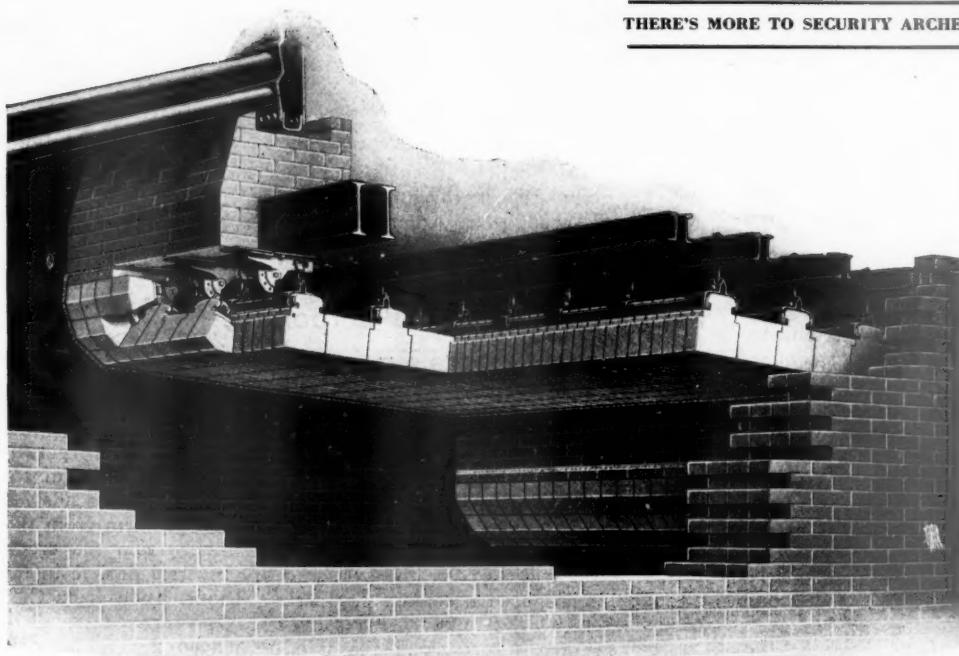
FOR ELEVEN MONTHS ENDED WITH NOVEMBER, 1931 AND 1930

Average number of miles operated	242,866.03	242,676.60	60,274.53	60,346.42	46,136.73	46,130.35	136,454.77	136,199.83
Revenues:								
Freight	\$3,042,038,560	\$3,804,571,197	\$1,277,531,163	\$1,612,575,220	\$577,092,611	\$693,968,220	\$1,187,414,786	\$1,498,027,757
Passenger	510,479,040	674,195,093	293,728,987	373,334,591	61,480,818	86,818,997	155,269,235	214,041,505
Mail	94,861,534	100,144,908	36,740,330	38,303,635	15,957,657	16,751,621	42,163,547	45,089,652
Express	76,734,447	105,542,186	34,293,666	47,547,926	12,143,477	15,381,679	30,297,304	42,612,581
All other transportation	132,095,026	163,893,014	76,689,389	95,444,617	9,875,492	12,059,181	45,530,145	56,389,216
Incidental	84,311,682	108,477,397	44,891,541	56,377,036	11,439,360	14,048,614	27,980,781	38,051,747
Joint facility—Cr.	10,549,408	12,248,915	3,361,503	4,141,920	1,864,513	2,171,257	5,323,392	5,935,738
Joint facility—Dr.	3,122,620	3,365,309	820,551	1,014,313	279,019	367,761	2,023,050	1,983,235
Railway operating revenues	3,947,947,077	4,965,707,401	1,766,416,028	2,226,710,632	689,574,909	840,831,808	1,491,956,140	1,898,164,961
Expenses:								
Maintenance of way and structures	505,984,565	669,319,855	213,122,977	284,412,498	97,205,170	116,606,567	195,656,418	268,300,790
Maintenance of equipment	762,765,882	945,923,477	352,879,674	439,021,575	138,954,439	168,928,346	270,931,769	337,973,556
Traffic	108,546,406	118,246,220	42,356,504	45,367,348	20,229,593	21,868,391	46,160,309	51,010,481
Transportation	1,446,866,975	1,730,900,689	682,996,525	813,876,524	236,162,348	276,600,326	527,708,102	640,423,839
Miscellaneous operations	38,521,015	48,668,898	18,731,747	22,875,157	4,348,604	5,598,270	15,420,664	20,195,471
General	168,356,513	177,394,099	73,563,200	77,675,492	29,393,366	30,065,134	65,399,947	69,653,473
Transportation for investment—Cr.	6,786,013	11,810,151	1,335,526	2,320,717	789,177	1,048,767	4,661,310	8,440,667
Railway operating expenses	3,024,255,343	3,678,643,087	1,382,335,101	1,680,907,877	525,304,343	618,618,267	1,116,615,899	1,379,116,943
Net revenue from railway operations	923,691,734	1,287,046,314	384,080,927	545,802,755	164,270,566	222,213,541	375,340,241	519,048,018
Railway tax accruals	292,267,483	333,430,083	120,620,065	137,428,771	53,887,370	62,032,723	117,760,048	133,968,539
Uncollectible ry. revenues	768,211	853,875	284,295	335,246	154,524	147,228	329,392	371,401
Railway operating income	630,656,040	952,780,356	263,176,567	408,038,738	110,228,672	160,033,540	257,250,801	384,708,078
Equipment rents—Dr. balance	92,618,567	91,657,219	46,791,726	45,783,252	4,300,123	639,937	41,526,718	45,234,030
Joint facility rent—Dr. balance	29,018,624	25,597,472	15,968,535	13,354,138	3,030,283	2,589,193	10,019,806	9,654,141
Net railway operating income	509,018,849	835,525,665	200,416,306	348,901,348	102,898,266	156,804,410	205,704,277	329,819,907
Ratio of expenses to revenues (per cent)	76.60	74.08	78.26	75.49	76.18	73.57	74.84	72.66

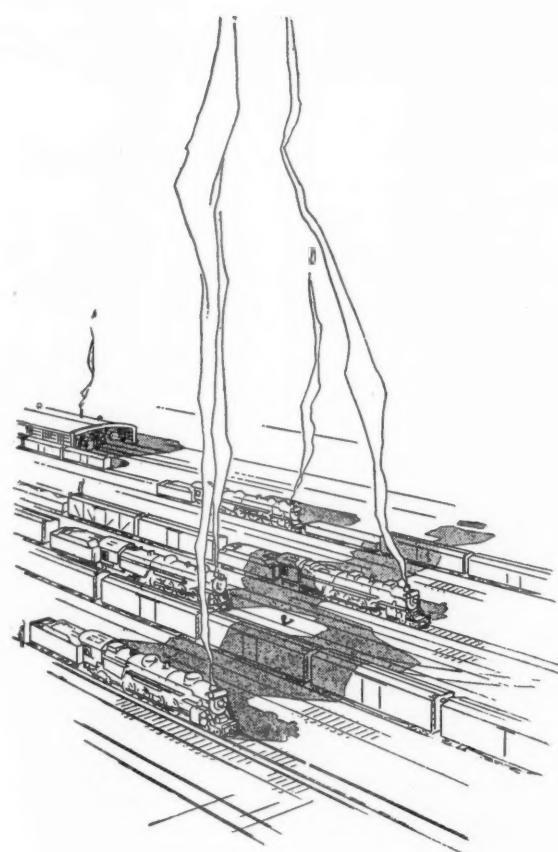
^a Deficit or other reverse items.
Compiled by Bureau of Statistics, Interstate Commerce Commission. Subject to Revision.

News Department Continued on Next Left Hand Page

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK



INDUSTRY, TOO, *Has Its Arch Problems*



A MERICAN Arch Company's reputation as combustion specialists has spread thru all industry.

Heating furnaces in the country's greatest steel plants have roofs designed by American Arch Company experts.

Oil still arches and air-cooled side walls by American Arch Company are used in the leading oil refineries. The largest units in the world are so equipped.

Boiler furnaces have turned to American Arch Company for air-cooled side walls and arches, including the biggest units of any railroad power plant.

Everywhere throughout industry combustion problems of this nature are being brought to American Arch Company.

Meanwhile the railroads are still getting this counsel as part of the complete service on arch brick that is rendered by American Arch Company.

AMERICAN ARCH CO.
Incorporated
NEW YORK CHICAGO

of the event was to bring the American people into such intimate knowledge of the man's character and career that they and their posterity would be better citizens with a deeper love of country," says a statement issued by the federal commission in charge of the celebration.

"The United States George Washington Bicentennial Commission, charged by Congress with the duty of planning the celebration, has done its work in such a way that the observance will last nine months, beginning with Washington's birthday and continuing until next Thanksgiving Day. Instead of its being confined to one place, it will be a part of the life of every community in the country.

"It is planned to show how versatile George Washington was. His talents and activities extended from the scouting of the frontier to the work of a statesman, from the invention and manufacture of farm machinery to landscape architecture. He died one of the richest men on this side of the Atlantic Ocean, a fact which was final evidence that he was as great in business as in war and statesmanship.

"The transportation world will be particularly interested in the plans for the celebration because Washington was the first American to perceive and publicize the value to this country of important transportation facilities. Railways being to him unknown, one of his great hopes was the construction of a system of waterway transportation linking the Atlantic seaboard with the Ohio river valley and the Great lakes country. He formed, and was the president of the Potomac River Company for this purpose, and he gave years of his life and \$10,000 of his own money to this project, which was, in brief, to connect by short portage across the Alleghany mountains the Potomac river and its tributaries with the Ohio and its headwaters.

"Although the scheme failed eventually because of lack of money, it stamped Washington as the first great advocate of development of commerce between the East and the West, and also as the first man to recognize that upon good transportation and communication facilities depended the destiny of the Republic."

Automobile Chamber Opposes Adoption of Flynn Report

Recommendations for federal regulation of motor trucks as suggested by Examiner Leo J. Flynn in his proposed report to the Interstate Commerce Commission will be opposed by the National Automobile Chamber of Commerce, as the result of unanimous vote of the board of directors of the organization.

The Chamber's opposition to federal truck regulation, its statement says, is based principally upon the following five factors:

1. No demand from consumers and the shipping public.
2. Less than two per cent of trucks would be affected.
3. Would increase shipping costs to public.
4. Railroad desire to shackle competitors unfair and not in public interest.
5. Federal regulation premature until experiments with such laws in states have demonstrated:
 - a. That they are constitutional.
 - b. That they are practicable and can be enforced.

- c. That the trucker gets protection from competition in return for expensive red tape.
- d. That substantial advantages in economy or security, would accrue to the shipper.
- e. That dividends to the public upon its highway investment will not be eliminated by forcing traffic more economically handled by road, back to the rails.

The Chamber will voice its opposition to the Flynn report through filing of briefs, and through oral argument before the Interstate Commerce Commission at Washington, March 1-2-3.

Reconstruction Finance Corporation Operating

(Continued from page 218)

of the decline in the prices of railway bonds. Loans to be made by the Railroad Credit Corporation from the proceeds of the emergency freight rate increase for the next year are expected to make up any deficiency in interest requirements of the railways for the past year, although it has been necessary for some companies to make temporary loans from banks or other sources, and the possibility of obtaining loans from the new government finance corporation is expected to remove fear of embarrassment by reason of maturities for this year, in most instances.

As revised in conference the law includes the provisions as to railways inserted in the House bill, so that loans may be made upon the approval of the Interstate Commerce Commission to "railroads and railways engaged in interstate commerce," the word "railways" being intended to include electric railways, and also to railroads and railways in process of construction; and to receivers of railroads or railways. Loans may be made to aid in the temporary financing of railroads or railways, "when in the opinion of the board of directors of the corporation such railroads or railways are unable to obtain funds upon reasonable terms through banking channels or from the general public, and the corporation will be adequately secured." The law also contains the House amendment that no fee or commission shall be paid by any applicant for a loan in connection with its application or with any loan to be made.

The provision inserted in the Senate that, except as to loans in aid of export transactions, "no loan or advancement shall be made by the corporation for the purpose of initiating, setting on foot, or financing any enterprise, borrowing operation, or application for credit not actually recognized or financed by the extension of banking credit prior to the adoption of this act," was amended in conference to provide only that no loan or advancement shall be made "for the purpose of initiating, setting on foot, or financing any enterprise not initiated, set on foot or undertaken prior to the adoption of this act." It is understood that this meets the request made by President Alba B. Johnson of the Railway Business Association, in a letter to Chairman Norbeck of the Senate committee on banking and currency, that the corporation be given authority beyond peradventure to include in its railway loans the temporary financing

of improvements as distinguished from refunding. This provision was not included in the bill as originally introduced.

Ogden L. Mills, Under Secretary of the Treasury, in an address at New York on January 25, said the corporation should furnish "a mobile reservoir of credit, available during the period of depression for credits otherwise unobtainable and at the same time an adequate guarantee against unforeseen contingencies." "Aside from the affirmative assistance which this corporation should render," he said, "I visualize it as constituting a solid wall under the protection of which men and institutions can carry on their normal operations without fear of sudden and devastating interruption. The Reconstruction Finance Corporation is intended to be particularly helpful to the railroads. In discussing railroads I am not approaching their problem from the transportation but rather from the credit standpoint. The universal decline in the value of railroad bonds, aside from the influence which it has exercised on all other securities, has played a very large part in the general threat to the country's credit. I know of no more important factor looking to the restoration of confidence and the general strengthening of credit than the safeguarding of the financial structure of this great industry. The pool created from increased rates for the benefit of the weaker roads, and the anticipated agreement between the executives and the leaders of railroad labor, should further assist in materially improving the railroad picture." Mr. Mills also said that the Interstate Commerce Commission has recommended legislation "which will strengthen our transportation system and restore confidence in the bonds of our railroads."

Train Speeds in Europe

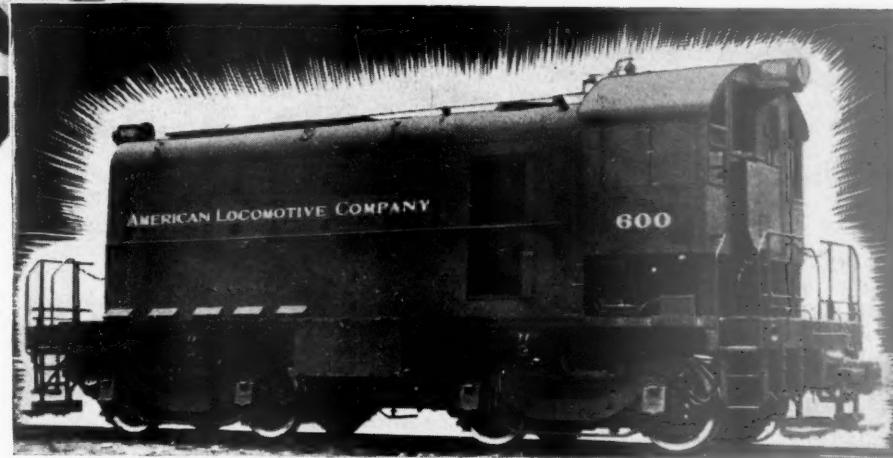
The London & North Eastern of Great Britain has recently been conducting a series of trial runs to test the high speed capacity of its modern passenger service locomotives. A graphic study of one of these tests, presented in a recent issue of the Railway Gazette (London), shows that a train hauled by a standard Pacific type locomotive made the 74½ mile run between Peterborough and King's Cross (London) at an average speed of 69.2 miles per hour. In another test the 55½ mile run between Cambridge and Liverpool Street (London) was made with a 4-6-0 type locomotive in 61 minutes inclusive of a one minute stop.

In an editorial commenting upon the tests, the Gazette expressed the hope that they foreshadow a general acceleration of passenger train service. It continues to cite recent developments in France where "nearly every issue of the time tables reveals some fresh speeding-up" and the latest time tables of the Paris Lyons & Mediterranean show that 47 runs on this railway are now scheduled at over 50 miles per hour, "a great improvement on a year ago, though still far short of the achievements of some other French lines."

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Alco



IMPROVES SWITCHING SERVICE LOWERS OPERATING EXPENSE

TRAINS brought in by modern road engines demand effective handling in the yard if the full benefits of the modern road engines are to be realized.

Many old switchers of light capacity and high maintenance charges should be scrapped and replaced by modern switchers embodying the same principles of design that have made modern main line engines so much more efficient and economical. However, in this particular service there are cases where the railroad man today has another choice—the ALCO Diesel Locomotive.

The most important characteristics of the ALCO Diesel Locomotive are high availability, low fuel costs when operating, no standby losses, very high starting tractive power. It requires practically no engine house force, no coal or water chutes, and reduces track maintenance.

These operating economies are lasting and cumulative. They outweigh by a big margin the first cost of the ALCO Diesel Locomotive when the high availability of the Diesel Locomotive can be utilized to fullest extent. There are many cases where, because of the low operating cost, the margin of profit over the carrying charges is large enough to make an ALCO Diesel Locomotive an exceedingly attractive investment.

**American Locomotive Company
30 Church Street New York N.Y.**

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Foreign

Signaling Improvements in Britain

The number of signalmen employed on the railways of Great Britain, now about 27,000, is 2,000 less than the number employed five years ago, and the aggregated wages paid (in 1930) was £5,432,004 (about \$27,000,000) as against a total five years earlier (1925) of £5,927,668 (\$29,630,000). These figures, given in the *Railway Gazette* (London) are embodied in an editorial in which the editor agrees with A. E. Tattersall, author of a recent paper, that some aspects of the economy accomplished in the signal department justify the title of the editorial, "Salvation By Signaling."

The improvement in signaling has been largely in the adoption of power interlocking thus enabling the consolidation of two or more interlocking plants into a single one. Remote operation of single switches has also been introduced, and some little automatic block signaling.

The Bermuda Railway

Faced with the problem of providing some means of mechanical transport for a resident population of 32,000, plus large numbers of tourists, but unwilling to lift the legal ban in existence since 1908 on automotive highway vehicles, the government of the British crown colony of Bermuda authorized, a few years ago, the construction of a railway. Although original plans contemplated completion of the project during the spring of 1928 at a cost of about \$2,000,000, Bermuda Traction, Ltd. (now the Bermuda Railways Investment Co., Ltd.), organized under the terms of the Bermuda Railway Act to build the new line, found considerable difficulty in obtaining necessary land at reasonable prices, with the result that actual construction was long delayed and total cost materially increased. These difficulties being finally overcome, with government assistance, the western section of the line, from Hamilton to Somerset, was formally opened to traffic on October 31, 1931, at which time the eastern branch was also near completion.

As built under contract by Balfour, Beatty & Co., Ltd., the new 22-mile railway serves the entire length of the main

islands, from Hamilton, the centrally-located capital, west to the British naval base at Somerset, 11 miles, and east to St. George, also 11 miles. The single track is of standard 4-ft. 8½-in. gage, and is laid with 67½-lb. rail on timber cross-ties. Because of the rolling nature of the island and the difficulty in securing a right-of-way, very little of the line is either level or tangent, most of it being on grades of up to two per cent or on curves of varying radius. From an engineering viewpoint, however, the railway's most interesting features are its bridges, which have a total combined length of 2½ miles, or approximately 10 per cent of the entire route mileage; this unusually high proportion of bridging being required because the line follows the coast for the greater part of its length, and crosses bays or arms of the sea at 11 different points. Important bridges, such as the 1,004-ft. viaduct with 135-ft. swing drawspan at Ferry Point, are of steel supported on concrete piers, but wooden trestles are used for most of the smaller structures.

Stations with passing sidings have been provided at 14 points between the Somerset and St. George terminals, each of the 15 sections into which the line is thus divided being controlled by a pair of key token instruments supplied by Tyer & Co. These instruments are operated by trainmen, removal of keys being governed by the condition of the two instruments for any given section in such a way that when one key has been extracted it is impossible to obtain another from either instrument until the first key has been restored to one of them. Simultaneous extraction of keys at both ends of a section is likewise impossible; and since possession of a token constitutes the sole authority for occupation of a section, complete safety is obtained by observance of the rule that no train may proceed without carrying one. As a further safeguard, each instrument box is provided with an electrical indicator showing the exact state of traffic movements in the section. Oper-

ation of the swing span in the Ferry Point bridge is controlled by an intermediate key token instrument working in conjunction with the section instruments at Ferry Point and Bailey's Bay stations, so that it is impossible either to open the bridge while the section is occupied by a train or for a train to enter the section unless the bridge is closed.

All traffic is to be handled by rail motor cars; six for passengers and two for freight, together with an equal number of trailers for each class of service having been supplied by the Drewry Car Co., Ltd. Each passenger motor car, weighing 20 tons, accommodates 16 first- and 26 second-class passengers on reversible upholstered or wooden seats, while the trailers, all first-class, weigh 14 tons and seat 40 passengers in individual arm chairs. The cars are mounted on steel underframes carried on four-wheel trucks, those bearing the power units being interchangeable so that during overhauls a spare stand-by unit may be substituted, making it unnecessary to withdraw the coach from service. Parsons 6-cylinder 4½-in. by 6-in. engines, with a continuous rating of 120 hp. at 1,650 r.p.m., supply the motive power, which is applied to the trucks by a straight-line transmission; while the Wilson-Drewry epicyclic pre-selective gear box, giving five speeds both forward and reverse, is used for the first time in railway service. This gear, which has shown about 99 per cent test efficiency makes it possible to reduce the pneumatically-operated control to its simplest form and to provide automatic engagement of gears at a constant rate under all conditions. Electric lighting, electric self-starters and air and hand brakes are also standard.

Shops equipped to make either running repairs or complete overhauls of all rolling stock are located at Hamilton.

Locomotive Hits Victims After Collision Near Moscow

Sixty-eight persons were killed and 128 injured in a recent rear-end train collision about nine miles northwest of Moscow, U. S. S. R., according to Associated Press dispatches from that city under date of January 7 and 17, the heavy casualty list resulting in part from the fact that the injured, placed by rescuers along a parallel track to await the arrival of medical crews, were struck by a following locomotive, running light.

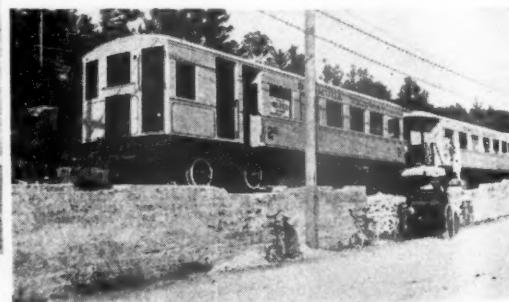


Typical station and track construction at Elbow Beach, one of the many less important points where passing sidings and instrument boxes for control of traffic in adjacent sections are not provided.



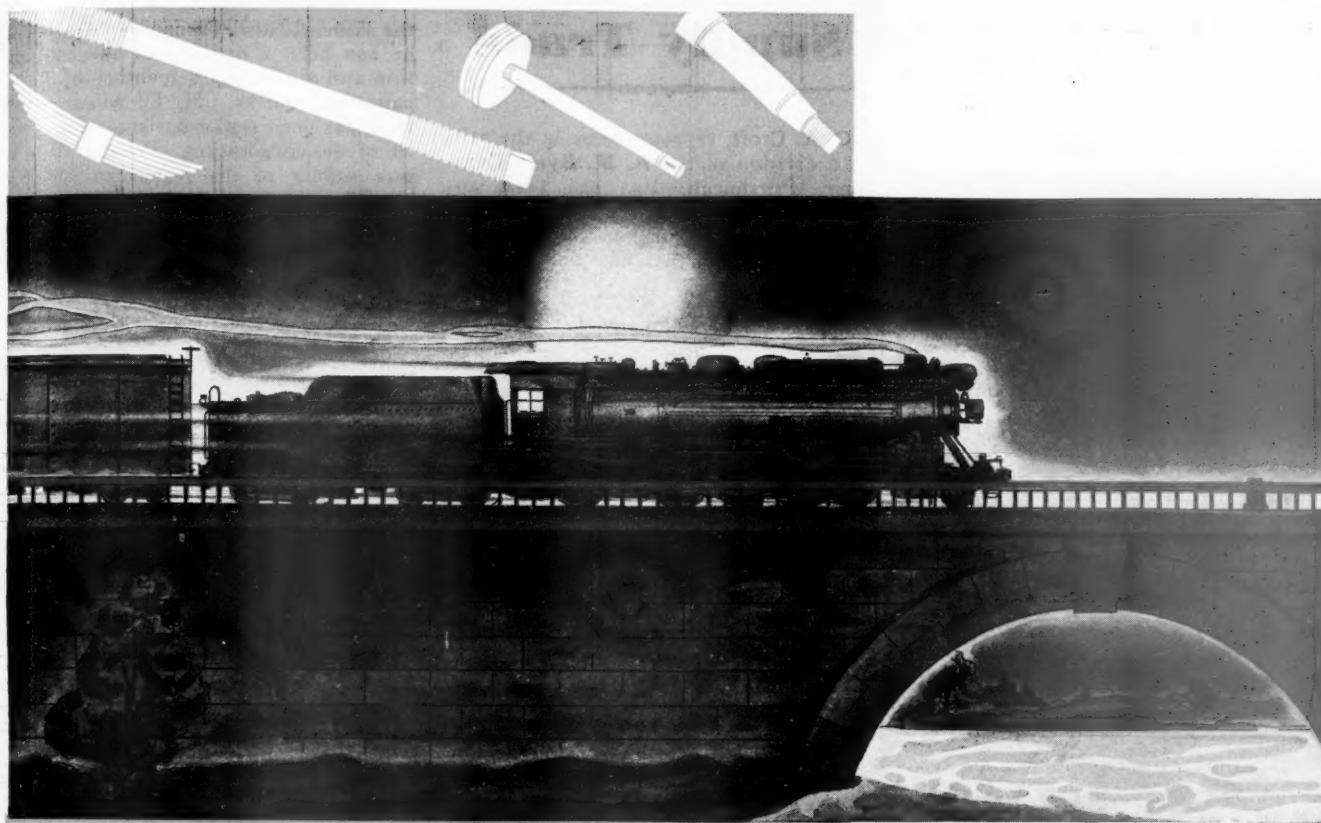
The Bermuda Railway

A construction view, showing progress on a cut through the coral rock which is the principal geological formation of the Bermuda Islands.



One of the Drewry rail motor cars for passenger service, with first-class trailer attached. Bicycles and horse-drawn carriages were Bermuda's only means of transportation before the construction of the railway.

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HIGHER SPEEDS bring higher stresses



THOSE Railroads enjoying the benefits of modern power find they can run freight trains at passenger speeds.

But every mile an hour increase brings a corresponding increase in the shocks and stresses on equipment.

To meet these without increasing weight requires better material. It exists in Agathon Alloy Steel.

Agathon Alloy Steels develop such a wide range of physical properties that some one steel will satisfy every railroad need.

Perhaps it's a special spring steel or a shock-resisting steel for axles. Again it may be a non-stretch steel for engine bolts or a special steel for reciprocating parts.

Metallurgists working in the country's largest research laboratory have developed an Agathon Alloy Steel for each railroad use. Service has thoroughly proven each one.

CENTRAL ALLOY DIVISION
REPUBLIC STEEL
 CORPORATION
 Massillon, Ohio



Toncan Iron Boiler Tubes, Pipe, Plates, Rivets, Staybolts, Tender Plates and Firebox Sheets Sheets and Strip for special railroad purposes Agathon Alloy Steels for Locomotive Parts Agathon Engine Bolt Steel • Nitralloy Agathon Iron for pins and bushings Agathon Staybolt Iron • Culverts Climax Steel Staybolts • Upson Bolts and Nuts Track Material, Maney Guard Rail Assemblies EnduroStainless Steel for dining car equipment, for refrigeration cars and for firebox sheets Agathon Nickel Forging Steel (20-27 Carbon)

The official account revealed that an "intoxicated peasant," who threw himself under a local passenger train to end his life, caused the catastrophe. The train was stopped to extricate his body, but the crew failed to set the proper signals, the report said, and a second local running in the same direction crashed into the rear of the first. Several cars of both trains, which were filled to capacity, were crushed. A few minutes later an extra locomotive, running on a parallel track, piled on to the heap of wrecked cars, inflicting many more casualties.

Newspapers spoke of neglect on the part of the crews of both trains and of the locomotive and attached a large part of the responsibility to the station master at Kosino, who, they said, failed to check whether the first train ever passed his station, made no effort to stop the second train, and did nothing, after learning of the wreck, to stop the locomotive. Only quick action by the crew of an oncoming freight train prevented that train also from figuring in the accident, the accounts said.

Seven of the eleven employees tried for their part in causing the wreck have been imprisoned, while the trial of several officers of the Kazan line, on which the wreck was the third of serious proportions in as many months, has also been recommended, later dispatches added.

Equipment and Supplies

FREIGHT CARS

THE WESTERN FRUIT EXPRESS has ordered 100 underframes for refrigerator cars from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of November 14.

THE CUDAHY PACKING COMPANY is rebuilding 25 refrigerator cars in its own shops. Underframes for these cars were ordered from the Pullman Car & Manufacturing Corporation as was reported in the *Railway Age* of January 23.

SIGNALING

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company an electro-pneumatic interlocking for Gwynn's Run, Md., to replace an existing mechanical interlocking. The machine will have 47 levers. This is a part of the extensive improvement involving the electrification of the line between Baltimore and Washington.

MISCELLANEOUS

THE DELAWARE, LACKAWANNA & WESTERN has ordered from the Bethlehem Steel Company 500 kegs of cut spikes, 500 kegs of screw spikes, 30,000 track bolts, 40,000 rail anchors and 112,000 tie plates.

Supply Trade

C. A. Croft, representative in the railroad division of the **A. M. Byers Company**, Pittsburgh, Pa., has been appointed resident railroad representative in the newly established office of the company at 1689 Arcade building, St. Louis, Mo.

The Hopkins Company, Chicago, has completed an arrangement with the **Massey-Harris Company**, Racine, Wis., to handle the railroad sales of the latter company's general-purpose four-wheel-drive tractor with all railways having purchasing agents at Chicago, Detroit, Mich., Cleveland, Ohio, and Cincinnati, St. Louis, Mo., Omaha, Neb., Dallas Tex., and Houston.

George H. Bucher has been elected vice-president and general manager of the **Westinghouse Electric International Company**, with headquarters as before at New York. Mr. Bucher has been connected with the Westinghouse organization since September 1, 1909. After graduating from Pratt Institute, Brooklyn, he joined the Westinghouse Electric & Manufacturing Company at East Pittsburgh as a graduate student. In 1911 he was transferred to the export department at New York and in 1920 he was appointed assistant to the general manager of the Westinghouse Electric International Company. One year later he was appointed assistant general manager of the same organization.

The American Kron Scale Company, manufacturers of heavy duty automatic dial scales, has recently been reorganized under the name of **The Kron Company** and its plant has been moved from New York City to 1720 Fairfield avenue, Bridgeport, Conn. **Richard F. Straw**, sales manager of the Wright Manufacturing Company has resigned that position and is now president of the new organization, and the other officers are **F. W. De Foe**, vice-president and **H. C. Stevenson**, secretary and treasurer. The board of directors consist of the above officers and **Ernst Ohnell**, chairman, and **T. A. Yawkey**. **George A. Nichols**, New York manager of the Wright Manufacturing Company has also resigned to become associated with the new company in an executive capacity.

W. J. Filbert, for many years comptroller of the **United States Steel Corporation**, has been elected to the newly created office of vice-chairman of the finance committee; **H. L. Austin**, senior assistant comptroller has been elected comptroller and **A. W. Vogt**, assistant comptroller has been elected senior assistant comptroller, all with headquarters at New York. W. J. Filbert has been connected with the United States Steel Corporation since its formation in 1901, serving as assistant comptroller until June, 1902, from which date he has been comptroller. Prior to the formation of the United States Steel Corporation, Mr. Filbert was auditor of

the Federal Steel Company. Since 1920 he has been a director of the corporation and since 1922 a member of the finance committee. H. L. Austin, since 1914, has been senior assistant comptroller of the corporation. Prior to 1914 he was auditor of the American Sheet & Tin Plate Company, a subsidiary of the United States Steel Corporation. He has been connected with the iron and steel industry in various capacities since 1897. A. W. Vogt has been with the corporation since its formation in 1901 serving until 1914 as chief statistician and since that date as assistant comptroller. Mr. Vogt was previously connected with the accounting department of the Illinois Steel Company.

OBITUARY

William V. Kelley, who resigned in 1912 as president of the American Steel Foundries, died at his home at Chicago, on January 21 of heart disease.

W. F. Richards, former mechanical superintendent of The Gould Coupler Company, and later consultant of the present Gould organization, died on January 4 at his home, Depew, N. Y., after a brief illness. Mr. Richards was born on October 14, 1857, at Albany, N. Y., and attended the public schools at Kent, Ohio. From 1873 to 1878 he served his apprenticeship in the car and locomotive departments of the New York, Pennsylvania & Ohio (now part of the Erie) shops at Kent and Galion, Ohio. From 1878 to 1882 he was in the mechanical departments of the Canadian Pacific, the New York, Pennsylvania & Ohio, the Erie and the Westinghouse Air Brake Company. In 1892 he became mechanical engineer and subsequently mechanical superintendent of the



W. F. Richards

old Gould Coupler Company in which capacity he was responsible for its truck side frame, bolster and journal box designs and primarily for the contribution which the Gould Company made to the development of automatic couplers for locomotives, passenger and freight train cars. Mr. Richards was for many years Gould's representative on the Engineers Coupler Committee which, with the advice and co-operation of the Master Car Builders' Committee on Couplers, de-



BETTER FIRES

FIREBAR CORPORATION
CLEVELAND OHIO.

veloped the type D coupler. The adoption of this as standard by the American Railway Association eliminated the confusion previously resulting from a large number of individual designs of couplers with widely different parts and only imperfectly interchanging as a whole.

TRADE PUBLICATIONS

INTERLOCKING STEEL FLOOR.—The Belmont Iron Works, Philadelphia, Pa., has issued an eight-page folder containing a detailed article describing and illustrating its new type of steel interlocking floor or deck construction, made up of standard rolled structural shapes, bolted, riveted or welded together. The folder also includes a table of safe loads for the flooring, both uniform and concentrated, with deflections, when standard 12-in. and 15-in. channels are employed in its design.

ALCOA ALUMINUM AND ITS ALLOYS.—This is the title of a 64-page reference book issued by the Aluminum Company of America, Pittsburgh, Pa. The book gives in concise form information concerning the physical and chemical properties of the aluminum alloys produced by the Aluminum Company of America and contains tables showing the sizes and commercial tolerances of the basic commodities manufactured from these alloys. The book is divided into three sections, the first giving general information; the second, data on the physical properties, corrosion resistance, etc., of wrought alloys; the third, data on casting alloys.

TEN YEARS (1921-1931) WITH WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY.—This is a handsomely printed and illustrated brochure, 9½ in. high and 12 in. wide, which is privately printed by Carreau & Snedeker, members of the New York Stock Exchange. It gives, in its 42 pages, a short history of the company in the period under review and lists its achievements and possibilities in the various industrial fields, including railroad electrification, which the company serves. The organization of the company, a list of its executive officers and plants and its earnings and dividend record are also given. Altogether an interesting and useful book which will be welcomed everywhere.

ALTHOUGH THE GOVERNMENT'S NEW "EMERGENCY DECREE" includes only reductions in freight rates, the German Railroad Company has decided voluntarily upon measures which bring a marked lowering of fares for persons whose business requires them to do much traveling. All Germany has been divided into 16 districts, each with about 3,700 miles of tracks, and commutation tickets valid for a month for the district in which they are purchased are being issued for 100 marks for third and 130 marks for second class passengers. The tickets are good also for fast and de luxe trains, on payment of the usual extra fare. In addition, these 16 districts will be sub-divided into stretches of 360 to 600 miles, with commutation tickets at correspondingly reduced rates.

Construction

GRAND TRUNK WESTERN.—The Ellington Miller Company, Chicago, has been awarded a contract for the construction of a highway subway at Pewamo, Mich., to carry State Trunk Highway M-21 under the main line of this railroad. The subway, of which the estimated cost is \$60,000, will have a double-track concrete sub-structure and a single-track steel superstructure and will span a 60-ft. roadway having a 6-ft. sidewalk on each side.

MISSOURI PACIFIC (Gulf Coast Lines).—The New Orleans, Texas & Mexico, a subsidiary of the Gulf Coast Lines, has been authorized by the Interstate Commerce Commission to build an extension of its Jefferson Island branch northwesterly 3.8 miles to the site of a sulphur mining plant being constructed by the Jefferson Lake Oil Company on the west shore of Lake Peigneur, La. Permission to retain excess earnings from the operation of the branch, which is estimated to cost \$90,930, was denied. In a previous decision, reported in the *Railway Age* of January 23, the Interstate Commerce Commission had also authorized the Texas & New Orleans, a Southern Pacific subsidiary, to serve the new Lake Peigneur sulphur plant by construction of a 2.82-mile line east from Clesne, La.; in commenting on the double authorization in its decision in the Missouri Pacific case, the commission said: "There is nothing in the present record to indicate the proportion of the traffic that the Southern Pacific and the Missouri Pacific may expect to handle with both lines in operation. * * * The record discloses a situation where a large source of potential traffic is under development within a short distance of two major railroad systems. Under such circumstances it would appear that both systems should be permitted to share in the additional traffic."

PERE MARQUETTE.—A contract for the construction of the substructure for a grade separation at Middle Rouge Parkway, Plymouth, Mich., has been awarded to the Jutton-Kelly Company, Detroit, Mich. The total estimated cost of the structure is \$80,000.

PUBLIC SERVICE COMMISSION OF NEW YORK.—The New York Public Service Commission has approved revised plans and estimates of cost for the elimination of two grade crossings at the intersection of the Lehigh Valley and Erie Railroads with the Waverly-Owego state highway 2-1/3 miles east of Tioga Centre station, Tioga, N. Y., and of a New York Central grade crossing just south of Junius station on the Junius-Waterloo highway, in Phelps, N. Y.

TEXAS & PACIFIC.—A contract has been awarded to the John W. Abbott Construction Company for a grade revision project at Fort Worth, Tex., having an estimated cost of \$42,000.

Financial

AROOSTOOK VALLEY.—*Acquisition by Canadian Pacific.*—The Interstate Commerce Commission has authorized the acquisition and control of this company by the Canadian Pacific by the purchase of its capital stock. It is an electric line, operating 32.11 route miles in Aroostook County, Me., and connecting with the C. P. R. at Washburn Junction. The price to be paid for the stock may not exceed \$215 per share. Commissioner Mahaffie, in a dissenting opinion, favored permitting acquisition of the line by the C. P. R. unconditionally, pointing out that valuers had set a value on the stock of \$264.87 per share and that the road had earned \$19 a share in 1930.

CENTRAL OF NEW JERSEY.—*Bond.*—The Interstate Commerce Commission has authorized this company to extend, as co-maker with the Edroyal Corporation, the date of maturity of a 5 per cent bond for \$1,250,000 from March 1 of the current year to March 1, 1935.

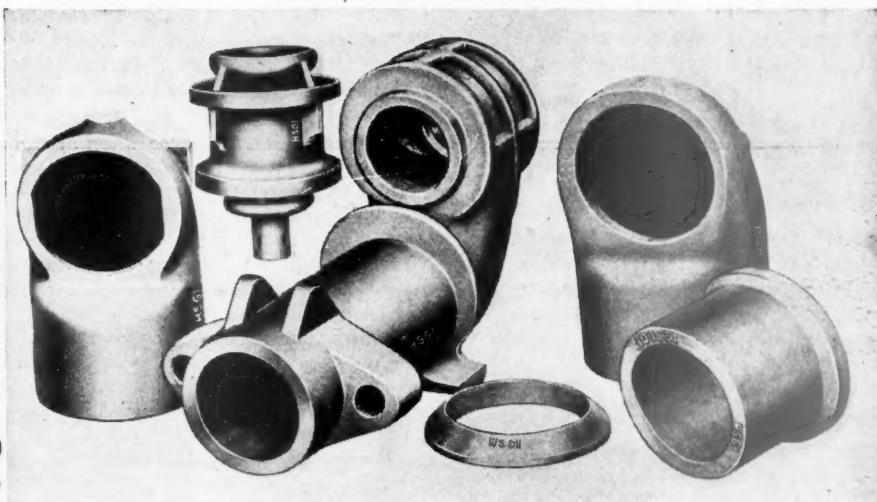
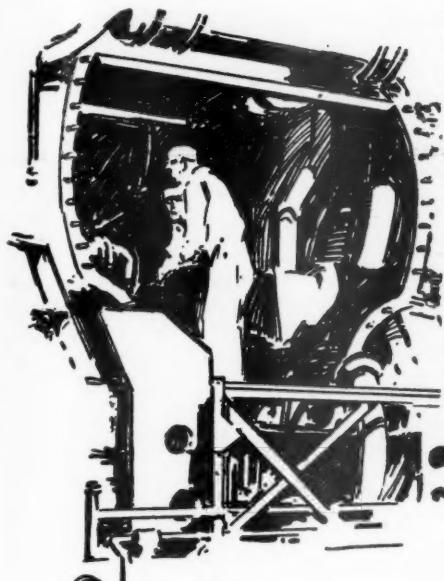
CHESAPEAKE & OHIO.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of \$28,142,000 of its 4½ per cent refunding and improvement mortgage, series C, bonds in connection with the surrender and refunding of a like amount of first lien and improvement mortgage bonds, series A.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized the St. Paul & Kansas City Short Line to issue \$638,000 of first mortgage 4½ per cent bonds in exchange for £127,600 of similar bonds which may be surrendered by their holders. The Rock Island is authorized to assume liability as guarantor for the issue. The roads applied for authority to issue \$3,851,000 of these bonds, but it appeared that \$3,213,500 had already been issued in exchange for sterling bonds without the authority of the Commission and the Commission stated that it was without power to validate these bonds. The exchange is based on a provision in the mortgage to the effect that the issue of £770,300 might be exchanged for dollar bonds on the basis of a £200 bond plus \$30 for each \$1,000 bond.

GREAT SOUTHERN.—*Foreclosure Action.*—Foreclosure action against the Great Southern, which extends from the Dalles, Ore., to Friend, 40.69 miles, is asked in a complaint filed in the circuit court at Dalles by District Attorney Francis V. Galloway, for Wasco County. This road is assessed at \$248,229 by the state tax commission and taxes are delinquent since 1926. The taxes due with accrued interest approximate \$55,000, of which \$6,706 has been paid by Wasco county to the state as the county's share of the state tax since 1926. The complaint cites that the county has not been reimbursed.

KENTUCKY & INDIANA TERMINAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to

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Increased Scope of Application Offers Greater Economies

APPLY HUNT-SPILLER *Air Furnace GUN IRON* to your steam pipe boiler fittings and prevent leaks in these parts.

Many railroads have reduced their boiler maintenance costs by applying this material to dry pipe sleeves, elbows, stand pipes and throttle boxes.

High temperatures have no effect on HUNT-SPILLER *Air Furnace GUN IRON* and its uniformity insures castings free from those defects which are the cause of dangerous leaks.

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HUNT-SPILLER GUN IRON

Air Furnace

issue \$351,000 of first mortgage 4½ per cent bonds to be pledged and repledged as collateral security for short term notes.

KOOLAU.—*Abandonment.*—The Interstate Commerce Commission has authorized this company, which operates an 11.2-mile line at Kahuku, Honolulu, Hawaii, to abandon its entire line.

NEW ORLEANS GREAT NORTHERN.—*Trackage.*—This company has applied to the Interstate Commerce Commission for authority to extend its operations by operating over the line of the New Orleans & Northeastern between Slidell Junction and Terminal Junction, in New Orleans, La., 27.47 miles.

NEW YORK CENTRAL.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue not more than \$75,000,000 of promissory notes to be secured by the pledge as collateral of \$100,000,000 of its refunding and improvement mortgage, series C bonds. The issue is to bear interest at not more than 6 per cent.

NEW YORK, NEW HAVEN & HARTFORD.—*Valuation Litigation.*—The court of appeals of the District of Columbia on January 18 reversed the decision of the District supreme court which had denied this company's application for a writ of mandamus directing the Interstate Commerce Commission to include in its valuation of the properties of the New Haven something representing its rights in the Grand Central and South Station terminal properties at New York and Boston. The commission is expected to appeal the case to the Supreme Court of the United States.

PENNSYLVANIA.—*P. B. & W. Bonds.*—The Interstate Commerce Commission has authorized the Philadelphia, Baltimore & Washington to issue \$5,000,000 of 5 per cent general mortgage, series D bonds, to be guaranteed by the Pennsylvania, in lieu of a similar issue of 4½ per cent bonds previously authorized. The issue is to be delivered at par to the Pennsylvania.

SEABOARD AIR LINE.—*Note.*—The Interstate Commerce Commission has authorized the receivers of this company to assume obligation and liability for the payment of interest on a note of the Southeastern Investment Company for \$90,000. The note holder accepted this note, which bears interest at 4 per cent and matures in 1936, in lieu of a matured obligation for \$140,000 bearing interest at 5¾ per cent, in connection with the acquisition of 10 acres of water front land in Jacksonville, Fla.

SOUTHERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to pledge from time to time \$42,769,000 of development and general mortgage 4 per cent bonds of 1956 as collateral for short-term notes.

SOUTHERN PACIFIC.—*Abandonment.*—This company and the Arizona Eastern and the El Paso & Southwestern have applied to the Interstate Commerce Commission for authority to abandon 71 miles of branch line in Cochise county, Ariz., operated by the Southern Pacific, includ-

ing the lines from Cochise to Douglas, 59.1 miles, from Gleeson to Kelton, 6.4 miles, from Kelton to Courtland, 4.6 miles, and from Pearce to Commonwealth Mill, 1.3 miles.

SOUTHERN PACIFIC.—*Acquisition of Cotton Belt Control Conditionally Authorized.*—The Interstate Commerce Commission has authorized this company to acquire control of the St. Louis Southwestern by purchase of a majority of its capital stock, subject to three conditions. Applicant would be required to maintain all routes via existing gateways unless and until otherwise authorized by the commission. It would be required to agree to abide by the commission's findings if it shall find that it should acquire the lines of the Waco, Beaumont, Trinity & Sabine and the Paris & Mt. Pleasant, at their commercial value, or assume the operation thereof. It would be required to agree to accept any additional minority stock tendered to it for exchange prior to January 1, 1933, on the basis of one share of Southern Pacific stock for three shares of Cotton Belt common stock and three shares of Southern Pacific stock for five shares of Cotton Belt preferred. The record will be held open and the order will not become effective until the applicant has filed its acceptance of the conditions. The Southern Pacific also was authorized to issue \$6,626,800 of its common stock in connection with the acquisition. Commissioners Eastman and McManamy dissented. The Southern Pacific had already acquired 24,700 shares of Cotton Belt common stock for \$2,886,100, and 87,200 shares of preferred stock for \$8,720,000. It proposed to acquire 59,380 shares of preferred stock and 24,700 shares of common stock for \$7,887,488 plus interest under an agreement with Kuhn, Loeb & Co., later transferred to the Varick Securities Corporation. These shares would make a total of 58 per cent of the outstanding stock and the Southern Pacific had also obtained options to acquire sufficient additional minority stock on the terms now required by the commission to bring its total holdings to 86 per cent. "The principal benefit to the public will arise," the commission said in its report, "from the inclusion of the Cotton Belt as a system line with the Texas & New Orleans. Such a unification will insure a strong competitor for the Missouri Pacific in the Rio Grande valley and will permit system handling of traffic to and from important Texas points from and to Memphis, St. Louis and points beyond. The Cotton Belt must depend principally upon bridge traffic for its continued existence, and the applicant is best situated and constituted for furnishing such traffic. At the same time the communities served by the Cotton Belt will, under Southern Pacific control, be assured of a strong transportation system." In the commission's consolidation plan the Cotton Belt was assigned to System No. 10—Illinois Central.

Average Prices of Stocks and of Bonds

	Jan.	26	Last	Last
		week	year	
Average price of 20 representative railway stocks..		35.63	35.40	94.30
Average price of 20 representative railway bonds..		70.91	70.94	94.52

Railway Officers

EXECUTIVE

Gaston C. Hand, who retired early in January, 1931, as vice-president and secretary of the Kansas City Southern, has returned to the service of that company as expert advisor to the management, with headquarters at 25 Broad street, New York. A photograph of Mr. Hand and a sketch of his career were published in the *Railway Age* of January 31, 1931, page 308, at the time of his retirement from the position of vice-president and secretary.

P. H. Enochs has been elected president of the Fernwood, Columbia & Gulf, with headquarters at Fernwood, Miss., succeeding **A. F. Wortman**, resigned. **Lamar Ramsay** has been elected vice-president, with headquarters at Fernwood, to succeed **J. P. Fraim**, who also has resigned, while **F. T. Rand** has been elected secretary and general manager, with headquarters at Tylertown, Miss.

FINANCIAL, LEGAL AND ACCOUNTING

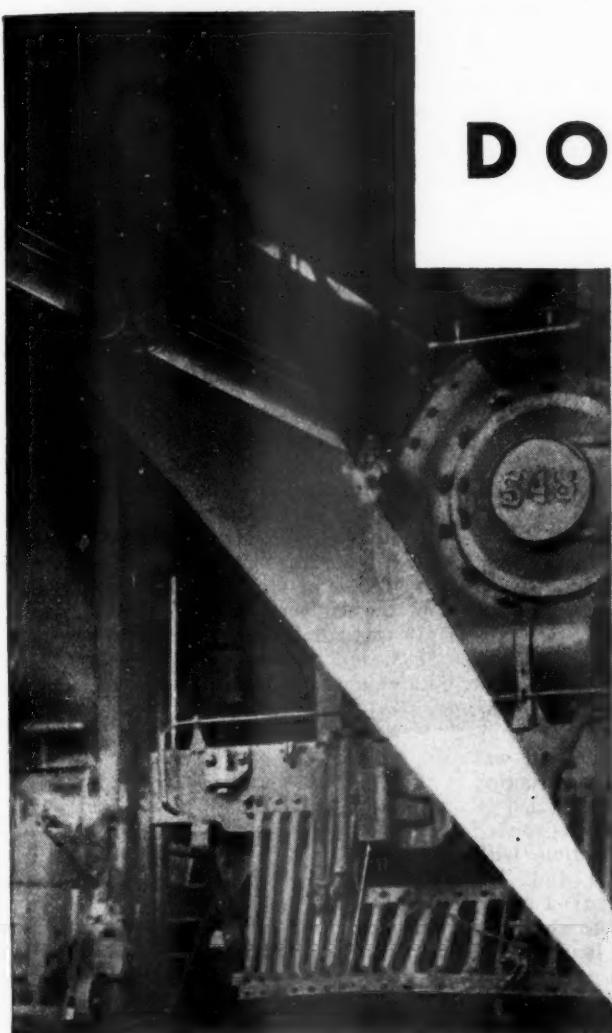
W. F. Wilkins has been appointed auditor of the Belfast & Moosehead Lake, with headquarters at Belfast, Me., succeeding **O. E. Langer**, resigned.

Sydney R. Prince, who was recently appointed general counsel of the Southern Railway System, to succeed the late **L. E. Jeffries**, was born at Mount Sterling, Ala., on September 11, 1876. Mr. Prince was educated at the University of Alabama, receiving his A. B. degree in 1896, and at Georgetown University, Georgetown, D. C., where he received



Sydney R. Prince

his LL. B. in 1898. In 1901, he entered the law department of the Mobile & Ohio at Mobile, Ala., as personal injury attorney, and in 1907 he was appointed attorney for that road. A year later he became assistant general coun-



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sel and in 1911 he was appointed general counsel. From 1918 to 1920, under United States Railroad Administration, Mr. Prince served as general solicitor of the Southern, and after the railroads were returned to private operation he remained in the same position until January 14, when he became general counsel of Southern and other lines constituting the Southern System.

OPERATING

Leon C. James, assistant manager of the New York State Realty & Terminal Company a subsidiary of the New York Central, has been appointed manager, succeeding **William E. Talcott**, retired.

D. E. Nichols, trainmaster on the Montana division of the Northern Pacific, with headquarters at Livingston, Mont., has been transferred to Spokane, Wash., where he succeeds **W. W. Judson**, who has been assigned to special duty in the office of the general manager.

G. I. Luque, superintendent of transportation of the Mexican Railway Company, Ltd., has been promoted to general superintendent of transportation, with headquarters as before at Mexico, D. F., in which position he will take over the administration of the sleeping and special car service.

TRAFFIC

Robert R. Williams, assistant general freight agent on the Buffalo, Rochester & Pittsburgh, with headquarters at Pittsburgh, Pa., has been appointed to the same position on the Baltimore & Ohio, with the same headquarters.

H. J. Nelson, commercial agent for the Illinois Central, at Seattle, Wash., has been promoted to general agent, at Portland, Ore., to succeed **William D. Stubbs**, who has been promoted to western traffic manager, with headquarters at San Francisco, Cal., as noted in the *Railway Age* for January 23.

ENGINEERING AND SIGNALING

W. S. Burnett, who has been appointed chief engineer of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters as before at Cincinnati, Ohio, as noted in the *Railway Age* for January 23, has a record of many years' experience in the railway engineering field, during which time he has been connected with a number of roads. He was born on September 5, 1878, at Montrose, Scotland, and graduated from the East of Scotland Technical College. After completing his education, Mr. Burnett came to the United States and entered railway service as a rodman on the Southern Indiana (now part of the Chicago, Milwaukee, St. Paul & Pacific), being promoted to instrumentman in 1900. In 1904 he was appointed resident engineer on the Chicago Southern (now part of the Chicago & Eastern Illinois). He entered the service

of the Big Four in 1906, as a resident engineer, going with the C. M. St. P. & P. in the same capacity two years later. In 1910, Mr. Burnett returned to the Big Four as resident engineer, being promoted to district engineer in 1912



W. S. Burnett

and to engineer maintenance of way at Springfield, Ohio, the following year. Later he was appointed district engineer at Springfield, and in 1924 he was promoted to engineer of construction with headquarters at Cincinnati. In 1925, Mr. Burnett was further advanced to chief engineer of construction, with headquarters at Indianapolis, Ind., being transferred to Cincinnati a short time later. His promotion to chief engineer became effective on January 15.

PURCHASES AND STORES

K. P. Chinn, who has been appointed assistant general storekeeper of the Southern Pacific Lines in Texas and Louisiana, as noted in the *Railway Age* for January 16, was born on June 29, 1893, at Wichita, Kan. He entered the service of the Southern Pacific on March 3, 1913, as a clerk in the office of the superintendent at Austin, Tex. He



K. P. Chinn

served in this position and as a time-keeper and division accountant until December, 1917, when he left railway service to enter the United States Army. Mr. Chinn returned to the service of the Southern Pacific in January, 1919, as

division storekeeper of the Beaumont division, being appointed traveling storekeeper two months later. He served in the latter position until June, 1926, when he was appointed assistant general storekeeper, which position he held until March, 1930, when he was transferred to the transportation department as a trainmaster, with headquarters at Jacksonville, Tex. Mr. Chinn was holding the latter position at the time of his recent appointment as assistant general storekeeper, with headquarters at Houston, Tex.

OBITUARY

Louis E. Jeffries, vice-president and general counsel of the Southern, who died on January 6, as announced in the *Railway Age* of January 16, page 150, was born at Uniontown, Ala., on February 14, 1868. Mr. Jeffries was graduated from the University of Alabama in 1885, and from the law department of the University of Virginia in 1887. He was admitted to the Alabama bar in 1888, and practiced law at Selma, Ala. Later he became a member of the firm



Louis E. Jeffries

of Pettus & Jeffries. In 1912, he became general attorney for the Southern, with headquarters at Washington, D. C. In 1916, he was appointed general counsel, and, in 1918, he was also elected vice-president, which positions he held until his sudden death, caused by a heart attack while attending the opening session of the Interstate Commerce Commission's hearings in the Eastern railroad consolidation case.

B. F. Van Vliet, division superintendent on the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Des Moines, Iowa, died on January 23 at that place, following an operation. Mr. Van Vliet entered the service of the Milwaukee in July, 1878, as telegraph operator at Monticello, Iowa, subsequently being advanced to chief train dispatcher at Mason City, Iowa, and thence to trainmaster at the same point in 1891. Eight years later he was promoted to superintendent at Milwaukee, Wis., and in 1903 he was assigned to special duties at Chicago. From 1904 until his death Mr. Van Vliet served as superintendent at various points on the system, being assigned to Des Moines in 1919.